

JUST STICK IT IN YOUR EAR, ALREADY!

B&W Revises A Classic In The C5 Series 2

MOREL SOUNDSPOUT MT-3 SPEAKERS

Are These Magic Spheres Your Ticket to Atmos?



SOUND & VISION



Where Technology Becomes Entertainment™ soundandvision.com

MAY 2015

STRIKE THE PERFECT NOTE: Yamaha's RX-A2040 AVR Balances Sound, Features, & Price

EARS ON!
FIRST
LISTEN TO
ATMOS
MOBILE
P22

HI-RES AUDIO SPECIAL!

- **YOUR 4 EASY STEPS TO HI-RES HEAVEN**
- **AFFORDABLE AMP/DAC COMBOS FROM TEAC & PS AUDIO**

ONE MORE TIME
GOLDENEAR TRITON FIVE
HIGH-END SOUND FOR MUSIC & MOVIES FOR UNDER \$2,000

4K4 LESS! ➤

SONY'S VPL-VW350ES PROJECTOR
MEANS MORE PIXELS, LESS DOLLARS

+ NEW 1080P BUDGET PROJECTORS
FROM EPSON & BENQ



TEN
THE ENTHUSIAST NETWORK





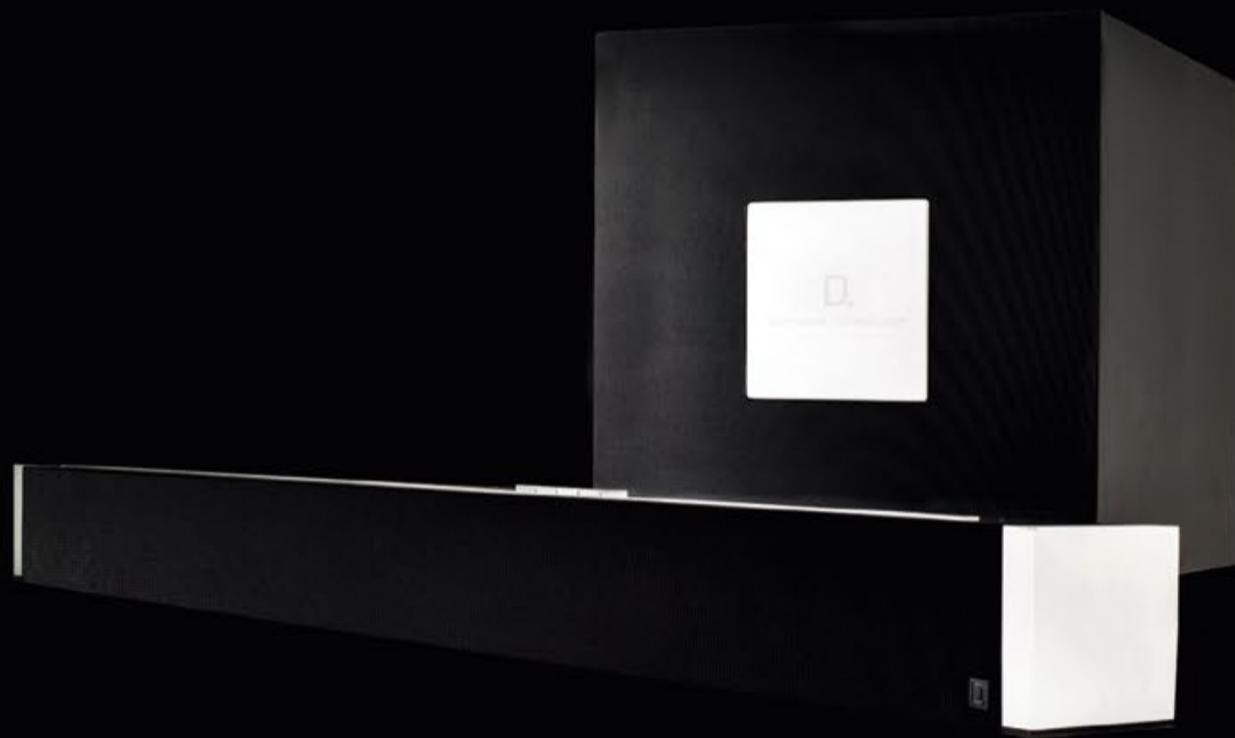
Winner
TechHome™



Mark of Excellence



DEFINITIVE TECHNOLOGY W STUDIO SPEAKER OF THE YEAR CES 2015



The Definitive Technology W Studio Wireless Soundbar was named Speaker of the Year at this year's CES.

And while we're honored with the accolade, we can't say we're surprised. We created the Definitive Wireless collection to redefine what multi-room wireless music systems should sound like.

Because we understand you want flawless audio quality no matter what room of the house you're in.

D.

DEFINITIVE TECHNOLOGY®

WHAT OBSESSION SOUNDS LIKE

Preview

ON THE COVER Hi-Res Audio Special: Affordable Amp/DAC Combos From Teac & PS Audio. Additional gear from B&W, GoldenEar, Morel, Sony, and Yamaha.



LOG ON TO soundandvision.com and sign up to receive our new, free eNewsletter for first-rate, up-to-the-minute reporting of everything that's hot in the world of home theater.



41

54



36

Four Steps to
High-Res Heaven

COLUMNS

Rob Sabin Track One:
Go Big and Go Home

8

John Sciacca The Connected Life:
The Internet of Things Is Upon Us

23

Al Griffin Ask S&V:
Audio Answers

25

Ken C. Pohlmann Signals:
Are You Bullish on Vinyl?

26

Michael Antonoff Apptitude:
Ready, Set, Tap

30

FEATURES

Four Steps to High-Res Heaven What you
need to know to start enjoying hi-res audio.

36



74

THE DEFINITIVE TECHNOLOGY WIRELESS COLLECTION



W Adapt

Brings the latest music services to existing audio systems

W9

Audiophile-grade wireless speaker

W7

Audiophile-grade wireless speaker

W Studio

Sound Bar System with Wireless Streaming

W Amp

Transforms existing speakers into a music streaming system

You shouldn't compromise on sound quality when you're not in your designated listening room. The Definitive Technology Wireless Collection brings our award-winning, high-performance sound to a family of wireless products that bring audiophile grade sound to any room in your home.

WHAT OBSESSION SOUNDS LIKE



DEFINITIVE TECHNOLOGY®

Available at:

MAGNOLIA |

CRUTCHFIELD®
Seriously into audio since 1974™



50

DEPARTMENTS

Letters The sound of one hand clapping, and star ratings for our movie reviews.	12
Perfect Focus New gear, top news, how to, and more.	20
New Gear A look at the hottest new A/V gear and gadgets.	34
Entertainment <i>Guardians of the Galaxy</i> , <i>The Maze Runner</i> , and more.	68
Premiere Design Samsung S9W UHDTV	74



60



64



68

58



TEST REPORTS

SPECIAL REPORT

P41-44

The New Wave

PS Audio Sprout • Teac AI-301DA
Amplifier/DACs
by Daniel Kumin

TEST REPORTS

P46-66

Sony VPL-VW350ES 4K SXRD Projector

Projector A bright idea.
by Al Griffin

46

Epson PowerLite Home Cinema 3500 3D LCD Projector

You can spell it Ep“sun.”
by Michael P. Hamilton

50

BenQ HT1075 DLP Projector

Big picture, small price.
by Thomas J. Norton

54

GoldenEar Technology Triton Five Loudspeaker

Loudspeaker Tall, dark, and handsome.
by Steve Guttenberg

58

Yamaha Aventage RX-A2040 A/V Receiver

Receiver Getting the balance just right.
by Michael Trei

60

Morel SoundSpot MT-3 Speaker System

System Sphere and now.
by Mark Fleischmann

64



46



The Definition
of sound.
Evolved

Tannoy's class-leading Definition

loudspeaker has evolved. The new

Definition DC8Ti and DC10Ti

floorstanding models raise the bar

for acoustic performance with new

plinths, integrated energy-grounding

stabiliser weights and revised

crossovers with upgraded components.

Retaining the same sumptuous style

and now offering an even more

articulate musical presentation,

Definition Ti evolves the definition

of contemporary loudspeaker design.

Find out more at tannoy.com

TANNOY
®

**Live Life
in 24 Bit**



Revox Joy S119 Network Receiver and G Shelf Speakers

For almost six decades, Revox has produced audio products known for exemplary performance and a level of technical perfection that comes with meticulous Swiss-German engineering. From the legendary Revox A77 reel-to-reel tape machine through today's elegant and imaginative Joy systems featuring full 24 bit/192 kHz playback support, Revox develops products that blend elegant European design with innovative technologies and unparalleled digital expertise. Revox. Exquisitely engineered.



*Revox Joy S208
Remote Control*

REVOX

www.tcgroup.tc/ReVox

Revox is distributed in North America by TC Group.

 **tcgroup**

335 Gage Ave, Kitchener, ON N2M 5E1, Canada | Tel: +1 (519) 745-1158

GoldenEar's 3D Array® Soundbar is "Absolutely Unbelievable"

— Darryl Wilkinson, *Home Theater Magazine*



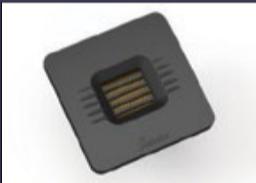
3D Array \$999

FF3 \$499

"Most exciting soundbar demo I heard"

— Brent Butterworth, *Sound & Vision Magazine*

We call the SuperCinema 3D Array, quite simply, "an extra-ordinary high-end loudspeaker system disguised as a soundbar." It is designed to combine the form factor of a sleek, stylish soundbar, with the performance of a true, high quality, component system. The complete ultra-high-performance system would include a powered subwoofer and a receiver or separates; plus the 3D Array achieves superb three-dimensional surround performance with or without rear surround speakers. Its 2.7" thin cabinet is constructed of aircraft-grade aluminum and contains six of GoldenEar's signature cast spider leg basket bass/midrange drivers and three High-Velocity Folded Ribbon Tweeters along with our breakthrough 3D Technology that cancels interaural crosstalk distortion for total sonic immersion.



High-Velocity Folded Ribbon Tweeter (HVFR™)



High-Definition Cast-Basket Bass/Midrange Driver

"Awesome just got redefined"

— Darryl Wilkinson, *Home Theater Magazine*

The 3D Array sounds amazing and the experts certainly agree. Al Griffin of Sound & Vision wrote that the 3D Array System, "...delivered at least 90% of my main rig's [Triton Two Towers] performance." Chris Martens of *The Absolute Sound* raved, "...a soundbar system so good that audiophiles might buy it for music playback alone...if asked to recommend a soundbar to please finicky, hypercritical audiophiles, this would be my hands down choice." And *Home Theater*'s Darryl Wilkinson summed it up perfectly when he raved that, "the width and openness of the soundstage was absolutely incredible" calling it "an instant classic" that is "a must-listen-to, top-of-the shopping list, soundbar-to-beat...when it comes to soundbars awesome just got redefined."

GoldenEar Technology
A Passion for Sonic Perfection®
www.goldeneartech.com

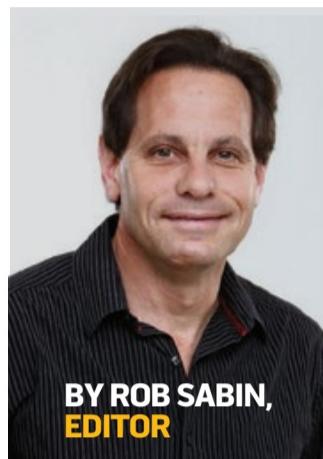
Follow us on:
facebook.com/goldeneartech
& twitter.com/goldeneartech

May 2015

TrackOne

GO BIG AND GO HOME

What Front Projection and Hi-Res Audio Have in Common



BY ROB SABIN,
EDITOR

This issue pays service to two very different audio/video technologies. One is long-established but in some ways breaking new ground. The other—well, I suppose that's also long-established and breaking new ground, though with a fresh spin.

We'll start with front projectors, where you'll find three reviews. One is of a native 4K projector, Sony's fourth to date and, at \$10,000 retail, its least costly. The other two, from Epson and BenQ, are priced at \$1,600 and \$1,199, respectively. Of course, we've been fanboys of the front projection category forever, but what struck me now about this Sony, in particular, is how the firm's 4K technology has dropped in a matter of three years from its starting point of \$25,000.

Today's budget projectors, meanwhile, are getting better and

better, and though these two pieces still won't quite deliver the extra-deep blacks that demanding perfectionists crave, they get darker than their counterparts of three years ago and have improved image quality in virtually every other aspect as well. These are impressive, entry-level enthusiast models.

The second technology highlighted in this issue is high-resolution audio, or "hi-res" as it has now been sanctioned by the Consumer Electronics Association. I can't deny that a mechanism for better-than-CD sound quality (aside from vinyl) has been around since the early days of SACD and DVD-Audio, two optical-disc-based formats that failed to capture the imagination of the mass market. Perhaps this new edition, a computer- and cloud-based model involving downloads of high-density digital audio files and increasingly higher-quality Internet streams, will catch on in a way the disc approach did not.

From a consumer standpoint, there are still some obvious issues with hi-res. Setting up a hi-res music library continues to require a bit of technical savvy; you need special player software that can manage the hi-res files or lay over your iTunes software to make it work, and for now at least, the quality of the digital-to-analog conversion in everyday computers and handhelds is still poor enough that realizing the full potential of these files requires the purchase of a separate DAC. (Otherwise excellent DACs found in better AVRs, unfortunately, mostly lack the significant asynchronous USB connection used in better standalone models.) Hi-res album downloads from the limited number of online stores that offer them remain pricey, and the offerings (while robust) are comparatively limited in scope. And Internet streaming services, which is where the mass market is really headed for music consumption, still don't offer better-than-CD quality at this writing. (Tidal, already charging around \$20/month for its CD-equivalent stream, was said to be preparing an upgraded (and presumably more expensive) hi-res service for imminent launch.)

Nonetheless, the high-res music I've heard in many demos and on my own system has proven to me that it's worth the effort and cost. With the right content on the minimum-required playback gear—decent quality but not high end—there is a palpable spaciousness, detail, and dynamic capability that you just don't get with CDs, and certainly not with lossy compressed downloads or streams. Along with LPs, hi-res audio is the best, most engaging experience a serious music lover can get right now short of a live performance, just as the huge impact of a front-projected image remains the best experience a movie lover can get at home. These represent the cutting edge of our audio/video experience, which is what *Sound & Vision*, and its predecessors *Stereo Review*, *Video*, and *Home Theater*, have always been about. And that's where we remain.

Hi-res audio represents the cutting edge.

Customer Service And Subscriptions

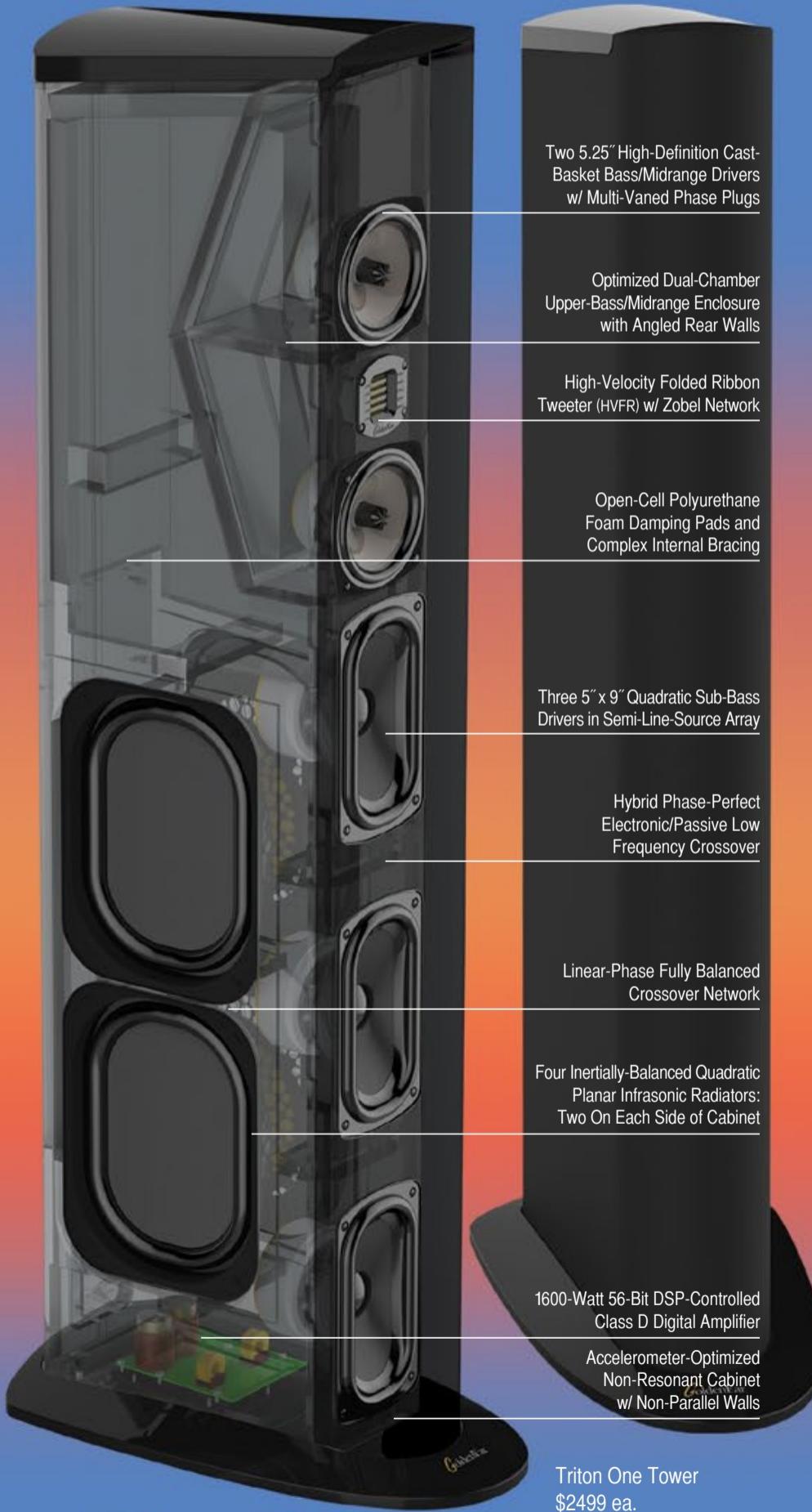
soundandvision@emailcustomerservice.com, call (800) 264-9872 (international calls: 386-447-6383), or write to: P.O. Box 420235, Palm Coast, FL 32142-0235. Please include your full name, address, and phone number on any inquiries.



LOG ON TO soundandvision.com and sign up for our free monthly eNewsletter. You'll get exclusive tips, trends, news, and reviews from your favorite S&V writers.

GoldenEar has Engineered Our New Triton One to Perform Like a \$20,000+ Super Speaker!

“Revelatory ... cosmically orgasmic ... astounding performance-vs-price ... these speakers absolutely embalm the competition” – Darryl Wilkinson, *Sound & Vision*



“Triton One shames some speakers costing ten times as much ... it is an absolute marvel”

– Caleb Denison, *Digital Trends*

“Best High-End Value at CES 2014 ... Sandy has created a speaker that defies its price point”

– John Sciacca, *Residential Systems*

“Best of CES 2014 ... stunning realism ... the sound was truly grand and majestic” – Roger Kanno, *SoundStage*

“Best Sound for the Money at CES 2014”

– Jonathan Valin, Kirk Midskog and Neil Gader, *The Absolute Sound*

Introducing Triton One, an evolutionary speaker that builds upon advanced technologies that have made Tritons mega-hits around the world. Stereophile called them, “A Giant Killer Speaker” and Robert Deutsch further added, “*it's not unreasonable to compare the sound of the \$4998 Triton One with speakers costing tens of thousands of dollars more*”. This new top-of-the-line flagship was engineered to deliver even better dynamics and bass than the extraordinary Triton Two, along with further refinement of all aspects of sonic performance. How well have we succeeded? In the words of HD Living’s Dennis Burger, the Triton One delivers, “... *the sort of upper-echelon performance that normally only comes from speakers whose price tags rival a good luxury automobile*”.

“Triton One “creates visceral, tangible waves of pure audio bliss”

– Dennis Burger, *HD Living*

Great sound is what it is all about and the Triton Ones deliver, as The Absolute Sound’s Anthony Cordeisan wrote “*they provide sustained musical pleasure and exceptional realism ... extraordinary sound quality and value ... one of the best buys in speakers ... highly recommended*”. The Ones were specifically engineered to excel with all types of music as well as movies. Best of all, they offer previously unheard of value, as Brent Butterworth wrote in Sound & Vision, “*I heard a few people saying the Triton One sounded like some \$20,000-and-up high-end towers, but I disagree: I think they sounded better than most of them*”. Hi Fi+’s Chris Martens raved the Ones are, “*jaw-droppingly good ... one of the greatest high-end bargains of all time with a dazzling array of sonic characteristics*”. And Darryl Wilkinson summed them up best, “*A Masterpiece ... GoldenEar has fully ushered in the Golden Age of the Loudspeaker*”. Hear them for yourself and discover what all the excitement is about.

GoldenEar Technology®
We Make High-End Affordable!™

www.goldenear.com

PO Box 141, Stevenson, MD 21153 (410) 998-9134

Like us on Facebook!
facebook.com/goldenear

Follow us on Twitter!
twitter.com/goldeneartech



GoldenEar's ForceField Subs: "Near perfect...; a tour de force"

— Andrew Robinson, *HomeTheaterReview.com*



"Thunderous...Room-Shaking"

— Al Griffin, *Sound&Vision Magazine*

GoldenEar's ForceField subwoofers are true over-the-top super subs that are especially remarkable for their compact size and unusually affordable prices. All three incorporate the same advanced technology and components including: DSP controlled high-power digital amplifiers (1000, 1200 or 1500 watts), ultra-fast long-throw high-gauss magnet structure drivers (8", 10" or 12") and pressure-coupled downward-firing quadratic planar infrasonic radiators. In addition, their uniquely shaped cabinets are not just attractive, but are also purposefully configured for dramatic performance benefits.

"Extraordinary bass prowess... I've never heard a sub this small go that deep"

— Steve Guttenberg, *The Audiophiliac*

With their high output capability, stunning impact, superbly musical bass articulation and breathtaking infrasonic low frequency capabilities, the ForceFields have received the highest praise from critics, experts and knowledgeable listeners around the world. Geoff Morrison of Residential Systems raved, "their thunder filled the room." AV Forums praised the, "monstrous output for such a small sub." Mark Fleischman of *Home Theater* wrote, "I was dumfounded" over their, "low frequency barrages with floor-shaking confidence." And to top it off, the British writer Stephen May raved, "this astonishing box can pressure-load a room like an angry Silverback" and Andrew Robinson warns, "Your walls, floorboards, and ceiling may just crap out on you." And, as Dennis Burger of *Tech Tell* observed, they are also, "shockingly musical!"

GoldenEar Technology®
A Passion for Sonic Perfection™
www.goldeneartech.com

Follow us on:
 facebook.com/goldeneartech
& twitter.com/goldeneartech

SOUND & VISION

May 2015 Volume 80/Number 4

Editor-in-Chief: **Rob Sabin**

Executive Editor: **Claire Crowley**

Managing Editor: **Courtney McKinnon**

Senior Editor, Technical Editor, Video: **Thomas J. Norton**

Audio Editor: **Mark Fleischmann**

Technical Editor, Audio: **Mark J. Peterson**

Editors-at-Large: **Bob Ankosko, Darryl Wilkinson**

Contributing Technical Editors: **Kris Deering, Michael Fremer, Barb Gonzalez, Al Griffin, Steve Guttenberg, Michael P. Hamilton, Daniel Kumin, Fred Manteghian, Geoffrey Morrison, John Sciacca, Michael Trei, David Vaughn**

Contributors: **Michael Antonoff, Shane Buettner, Anthony Chiarella, Lauren Dragan, Corey Gunnestad, Fred Kaplan, Josef Krebs, Ken C. Pohlmann, Leslie Shapiro, Kim Wilson**

Music Editor: **Mike Mettler**

Movies Editor: **Chris Chiarella**

Logistics Manager: **John Higgins**

Technical Consultant: **Joel Silver, Imaging Science Foundation**

Art Director: **Heather Dickson**

Copy Editor: **Ken Richardson**

Web Monkey: **Jon Iverson**

Contributing Photographer: **Jorge Nunez**

MANUFACTURING & PRODUCTION OPERATIONS

VP, Manufacturing & Ad Operations: **Greg Parnell**

Senior Director, Ad Operations: **Pauline Atwood**

Advertising Coordinator: **Jason Audiss**

Archivist: **Thomas Voehringer**

General Manager: **Keith Pray**, 212-915-4157, keith.pray@sorc.com

Associate General Manager: **Ed DiBenedetto**, 212-915-4153, ed.dibenedetto@sorc.com

National Retailers, Classifieds: **Laura LoVecchio**, LoVecchio Associates,

718-745-5025, laura_lovecchio@sbcglobal.net

Sales Coordinator: **Rosemarie Torcivia**, 212-915-4160, rosemarie.torcivia@sorc.com

Marketing Director: **Shawn Higgins**

ENTERTAINMENT GROUP MANAGEMENT

Production Director: **Kasey Kelley**

Editorial Director, Digital: **Chris Mauro**

Finance Director: **Adam Miner**

DIGITAL GROUP

Digital Director, Engineering: **Jeff Kimmel**

Senior Product Manager: **Rishi Kumar**

Senior Product Manager: **Marc Bartell**

Creative Director: **Peter Tracy**

TEN: THE ENTHUSIAST NETWORK, LLC

Chairman: **Peter Englehart**

Chief Executive Officer: **Scott P. Dickey**

EVP, Chief Financial Officer: **Bill Sutman**

President, Automotive: **Scott Bailey**

EVP, Chief Creative Officer: **Alan Alpanian**

EVP, Sports & Entertainment: **Norb Garrett**

EVP, Chief Content Officer: **Angus MacKenzie**

EVP, Operations: **Kevin Mullan**

SVP, Enterprises: **Tyler Schulze**

EVP, Sales & Marketing: **Eric Schwab**

SVP, Digital Operations: **Dan Bednar**

VP, Sales Operations: **Matt Boice**

SVP, Financial Planning: **Mike Cummings**

SVP, Automotive Digital: **Geoff DeFrance**

VP, Editorial Operations: **Amy Diamond**

EVP, Aftermarket Automotive: **Doug Evans**

SVP, Content Strategy, Automotive: **David Freiburger**

SVP, Digital, Sports & Entertainment: **Greg Morrow**

VP, Digital Monetization: **Elisabeth Murray**

SVP, Marketing: **Ryan Payne**

EVP, Mind Over Eye: **Bill Wadsworth**

CONSUMER MARKETING, ENTHUSIAST MEDIA SUBSCRIPTION COMPANY, INC.

SVP, Circulation: **Tom Slater**

VP, Retention & Operations Fulfillment: **Donald T. Robinson III**

TEN: THE ENTHUSIAST NETWORK, LLC

831 S. DOUGLAS ST.

EL SEGUNDO, CA 90245

PHONE: (310) 531-9900

TEN: THE ENTHUSIAST NETWORK, LLC

261 MADISON AVE.

NEW YORK, NY 10016

PHONE: (212) 915-4000

Back Issues: To order back issues, visit www.circsource.com/store/storeBackIssues.html.

Reprints: Contact Wright's Media 877-652-5295 (281-419-5725 outside the U.S. and Canada) to purchase quality custom reprints or e-prints of articles appearing in this publication.

Subscription Customer Service: E-mail soundandvision@emailcustomerservice.com, call (800) 264-9872 (international calls: 386-447-6383), or write to Sound & Vision, P.O. Box 420235, Palm Coast, FL 32142-0235.

Please include full name, address, and phone number on any inquiries.

Canada Post: Return undeliverable Canadian addresses to IMEX Global Solutions, P.O. Box 25542, London, ON N6C 6B2.

Any submissions or contributions from readers shall be subject to and governed by TEN: The Enthusiast Network's User Content Terms and Conditions, which are posted at <http://www.enthusiastnetwork.com/submissions>.



COPYRIGHT © 2015 BY TEN: THE ENTHUSIAST NETWORK MAGAZINES, LLC. ALL RIGHTS RESERVED. PRINTED IN THE USA.



THE
ENTHUSIAST
NETWORK™

Simply...Beautiful.

Elegant Audio/Video Furniture that Enhances your Home and Television

Bell'O®



PR45



Curved Wood Furniture



Metal and Glass



Wood Cabinets with Fireplace

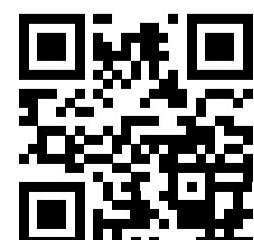


Computer Desks

A Division of Twin-Star International, Inc.
twinstarhome.com | bello.com



SCAN THE CODE
TO SEE THE
LATEST BELL'O
PRODUCTS



Letters

We welcome
questions and
comments

E-mail them to HTLetters@sorc.com. Please note: Questions about the features and functions of a particular product are best directed to the manufacturer. Questions about what product you should buy are best directed to a dealer who knows all the details of your system, your preferences, and your personal habits. All submissions are considered the exclusive property of *Sound & Vision* magazine and TEN: The Enthusiast Network. We reserve the right to edit letters for brevity. Due to the volume of mail that we receive, we regret that we cannot respond to every letter.

The Sound of One Hand Clapping

Your article about the re-release of the Beatles mono LPs on vinyl ("The Beatles Get Back to Mono," November 2014) has prompted a question. The article addressed the significance of using an appropriate monaural cartridge on the turntable for highest fidelity. In spite of the many outstanding attributes of the McIntosh playback system used for the listening sessions, however, it appeared to be configured as a typical stereo system with two speakers spaced several feet apart. Of course, this would create a virtual monaural image in between the speakers. Would listening to these records with just one speaker be more historically correct as well as higher fidelity? I believe an actual sound source, nearly one-point, rather than a virtual location would be desirable. Have some of your reviewers and readers experimented with a truly monaural playback configuration?

Robert Perl
Lubbock, TX



Robert, none of our reviewers have gone to the trouble of setting up a one-channel system to play these discs, but we asked Louis Dorio, the Ortofon specialist who set up the 2M Mono SE cartridge used for the formal listening sessions and contributed the tech sidebar for our story, to respond.—RS

"Great question. It is absolutely true that systems of the pre-stereo era had one speaker. What is open for debate is if the playback quality is somehow compromised by the use of more than one speaker. In most cases, running two speakers isn't going to be of any significant detriment to the mono experience. However, your mileage may vary depending on the room acoustics and speaker placement. In a two-channel system, the stereo image is comprised of the combination (and interaction) of the information from both left and right channels. On a theoretical level, the interaction between two speakers while playing a mono source could cause phase issues, but in practice you'll find that the fidelity is often times equivalent. The solution here is to experiment and find the configuration that you think sounds better. We can agree that the most authentic mode of playback is one speaker, but that's the beauty of listening preference. If the shoe fits, wear it!"—Louis Dorio, Ortofon, Inc.

Star Ratings for Movies?

I have been a *Sound & Vision/Stereo Review* reader for the past 25 years or so—great magazine. I do enjoy reading your movie reviews, however, I think you should really

You can spend your money on a BIG name...
But wouldn't you rather

SPEND IT ON PERFORMANCE?



"I fell in love with it from the first moments I listened to it. Wow, wow, and wow again!"

—Mark Fleischman
Sound & Vision Magazine

SOUND&VISION

Performance
Build Quality
Value



Now offering **DENON**

Bundle a receiver with RSL high performance speakers and save BIG!



Call for Details



SPEAKER SYSTEMS
HIGH-END HOME THEATER

800-905-5485

Visit us at rslspeakers.com



Audioengine D3 Premium 24-Bit Digital-to-Analog Audio Converter. Only \$149.



Join the computer audio [r]evolution

Connect the Audioengine D3 to a USB port on your Mac or PC and send high-quality music to your headphones or any audio system.

The D3 includes a 24-bit DAC and a high-performance headphone amplifier that drives even the most demanding headphones.



Machines for music.
audioengineusa.com

© 2015 Audioengine

LETTERS

add a category to your ratings. Currently, you rate: Picture, 3D-Ness (for 3D titles), Sound, and Extras. I think you should also add a Movie category, as in, how good is the movie itself? Even if the aforementioned categories are five-star, if it's not a good movie, I won't spend my time watching it.

Tim Marke

Via e-mail

I'm proud of the fact that our Blu-ray Disc reviewers, besides being sensitive and astute about the sound and video quality of the

transfer in ways that typical movie reviewers are not, are movie lovers first and foremost, and bring a rich historical knowledge of film to their reviews. The reviewer pretty much always tells you in the text whether he thinks this is a great film or a stinker, and if it's an ancient or modern classic, where it fits in the canon. So it shouldn't be so hard to figure out whether a movie is of interest after reading the short review. I don't think a star rating for the reviewer's take on overall quality of the movie would be helpful or add anything meaningful. But maybe I'm missing something...—RS

My Big 60-Inch

I have wondered if and how a great projector would work on, say, a 60-inch diagonal screen masked in the alcove of an entertainment center. Seems to me if it is sharp and bright on a 120-inch screen it should be phenomenal on a 60-inch screen. I have read about throw distances and such, but I do not quite understand what it would take to use a projector on a smaller screen. I realize that, if it will work at all, it would be extreme overkill, but let's put that aspect aside.

Steve Perlstein

Via e-mail

Video technical editor Tom Norton responds: I can see only one advantage in the setup you propose: If you have a good projector and decide to go with a bigger screen at a later date, all you'll need is a bigger screen. But otherwise I have reservations about going this route if the screen size you require is 64 inches or less.

First, the selection of screens in such small sizes is limited. A quick Internet search turned up only a Carada 64-inch diagonal, 16:9 model on sale (in mid February) at \$432. The smallest Elite Screen I found was 92 inches. The Stewart Filmscreen and Da-Lite sites were vague as to the available sizes (though both companies should be able to make a custom screen of almost any size—for a price that almost certainly will be higher than \$432).

In addition, keep in mind that the throw distance for such a small image may position the projector inconveniently close to the screen. This will depend on the specific projector and its zoom range. The only way to be sure would be to contact the company that makes the projector you plan on using.

Also, don't discount the expense of periodic lamp replacement, generally at every 2000 hours of use. Though we perfectionists would never let it go that long, the gradual loss of brightness should be less visible on a smaller screen. Lamps can cost \$300 to \$400, sometimes more. There's nothing to replace in a flat screen set.

And if 4K is in your sights, 4K Ultra HD sets are currently available a half the price of true 4K home projectors—or less.

When used on such a small screen, most projectors should be able to produce sufficient brightness, but a flat screen set will likely produce a more vivid image than a projector unless the room is totally dark. Yes, there are projection screens designed for use with ambient light. They can help, tend to be on the expensive side and cannot fully compensate for the lack of total darkness. Flat screen sets are generally designed to work well in typical room lighting, while projectors always perform their best in a darkened room.

A flat screen set of similar size may not only have more "pop," particularly in a well lit environment, but should also give you superior blacks. That's because both the peak white level and the minimum black level will

Seriously
INTO AUDIO since 1974

The perfect gear. | Shipped free. | Supported forever.

See our full product selection or sign up for our email newsletter and catalog at crutchfield.com/svs
1-800-319-8843

CRUTCHFIELD®



New ZVOX SoundBase Systems. Bigger. Better. Bluetooth.

Our new ZVOX SoundBase® home theater systems are bigger than ever – up to 60" wide – so they are compatible with virtually any size TV. And they sound better than ever – with improved tonal balance, more expansive virtual surround sound and remarkable bass from up to three built-in powered subwoofers.

- Improved PhaseCue® technology gives you three-dimensional sound from one cabinet.
- New AccuVoice® technology delivers incredibly clear vocal reproduction.
- aptX Bluetooth allows for wireless music streaming from your phone or tablet.
- Up to three built-in powered subwoofers produce insanely great bass.
- Low-profile (3.5" high) designer cabinets virtually disappear under your TV.
- Models range in size from 24" - 60" to match up with even very large TVs.

Fantastic home theater sound does NOT have to be complicated, cluttered or costly.

New ZVOX SoundBase systems range in size from 24" to 60" and are priced from \$299.99 to \$799.99. They are available through the zvoxaudio.com web site or from over 600 retail outlets including Magnolia Home Theater stores (in select Best Buy stores), Amazon.com, Crutchfield.com, PC Richard, Paul's TV, Carl's TV, Video Only, ListenUp, Worldwide Stereo. For dealer list visit zvoxaudio.com.

What The Critics Say About ZVOX:

"Home audio product of the year."

CNET

"Best buy."

Consumer's Digest

"Audiophile quality."

Stereophile

ZVOX®
Great Sound. Made Simple.

Free Shipping & 30 Day Home Trial
zvoxaudio.com | 866-367-9869



LETTERS

increase when the image is projected onto a smaller screen. Among flat screen sets, LCD designs that use LED local dimming are usually the best in this regard, short of an expensive OLED. Check out our reviews for more on this. We always look for good black levels. But the black level in a projected image is affected by the screen, which is why we always specify the screen type and size we use in projector reviews. A given flat screen set is a package deal with a fixed screen size.

Embracing the Curve—NOT!

I just read the February/March issue and saw that your overall “Top Pick of the Year” product is the LG 55EC9300 OLED HDTV. It’s clear that you picked this product because of some great features and a great price point for an OLED TV. However, your magazine has made a point more than once about the questionable value of a curved screen. In fact, Rob Sabin addresses this exact point in his response to one of the letters to the editor in this same issue by saying “we have soundly trounced curved screens as nothing but a gimmick in flat panels below 105 inches diagonal.” According to my math, 55 inches is almost half the size of your reference point, so what gives? Of all the great TVs out on the market right now, why would you choose one that clearly contradicts your expert recommendations?

Barry Neulen

Via e-mail

The curve is indeed a gimmick, Barry; I remain of the opinion that it adds nothing to the viewing experience at this screen size, and some argue that it has a deleterious effect in narrowing the viewing window with LCD models; less of an issue with OLED, which doesn’t have the same problems with off-axis viewing. But the curve, despite its uselessness for anything beyond fashion, doesn’t present a serious enough problem and isn’t a good enough reason not to enjoy the superlative image quality this OLED set provides, especially at the price.

That said, don’t just take my word for it. The subject of curved panels—the claims made for and against—is one that will soon be tackled more fully in an upcoming feature.—RS

Let's Bench-Test the Reviewers

I have been reading your publication for decades and in all of that time I have never seen a review of two essential components for sound and vision: eyes and ears. I see reviews of, and advertisements for, high-priced, high-end components that promise high-definition results, but since human eyes and ears are the final analog filters through which this incoming information is processed, what is the true end result? In the interest of fair and accurate reporting, with what frequency (pun intended) do your reviewers have their hearing and vision capabilities professionally evaluated, and what are the results? I have the same concerns

regarding recording engineers and artists involved in current projects, as well as “remasters” of previous work. After forty-plus years, can a now 71-year-old Jimmy Page really be hearing the same sounds heard during the creation of the original Led Zeppelin catalog? Also, let’s see a review of those capabilities by the average person according to age group, to learn just how much “definition” we are capable of perceiving and really need, before we go out and spend thousands of dollars on “upgrades” that might provide little or no benefit. For example, I am a male in my early 60s and recently had my hearing and vision tested. I was surprised to find that my hearing is almost perfectly flat—from 200 Hz to 8,000 Hz, with a sharp roll off below and above that, respectively; about the same as an 8-track tape player from the 1960s! I also have 20/20 vision with correction, no cataracts, and perfect color vision, so I plan to purchase new components accordingly as needed, to avoid “excess & overkill” as was mentioned in the Letters section of the February 2015 edition. P.S.: An 8-track tape player is *not* on my wish list, even if I could find one!

Victor Silveri

Getzville, NY

WANTED!

VINTAGE TURNTABLES

Technics SP-02, SP-10, MkII/MkIII & SL-10/15
Garrard 301 & 401 • Mitsubishi LT-5V
Onkyo PX-100M • Thorens Prestige
Sony PS-X9, TT S-8000
JVC TT-101, QL-10 & QL-F6
Luxman PD-555 • EMT • Empire
Kyocera PL-901/910 • Kenwood L-07D
Marantz TT 1000 mk II
Pioneer Exclusive P3/P3a & PL-L1 & PL-C590
Micro Seiki AP-M1, S-Z1, SX-111FV, DDX-1000

Got some vintage equipment you'd like to sell?

Call 1-888-926-2564 or email
Stelly@acousticsounds.com

CLASSIC VINYL

WE BUY PRE-OWNED LP COLLECTIONS
No matter how big or small.

OUR INTERESTS: Audiophile,
Mobile Fidelity Sound Lab, DCC, Nautilus,
Japanese Pressings, Gold CD,
Original Jazz, Classical, Blues and Pop.

Have a collection you'd like to sell?
Call 800-716-3553 or email
Nate@acousticounds.com

ACOUSTIC SOUNDS^{INC.}

The World's Largest Selection Of Audiophile Recordings

ACOUSTICSOUNDS.COM | 800.716.3553

DIMENSION

ULTRA THIN, EXTREME PERFORMANCE.



 **FOCAL**[®]
THE SPIRIT OF SOUND

"This soundbar outdoes any other I know of in bass dynamics and extension, loudness, and overall impact"

Dan Kumin

SOUND & VISION

"The most refined sounding bar I've heard"
Steve Guttenberg

c|net

Including 30 Hz subwoofer
1599\$



5.1 Soundbar
1399\$

- Proprietary audiophile speakers for excellent music reproduction
- Exceptional detail and clarity for intelligible dialog
- Six high-output amplifiers — 450 Watts total
- Seismic bass with or without subwoofer
- Wireless or hard-wired connection



Distribution by **AUDIO PLUS SERVICES** www.audiopluservices.com - 800.663.9352



Distribution by **PLURISON** www.plurison.com - 866.271.5689

Join the Audio Revolution

ACOUSTIC SOUNDS **SUPER HI-REZ**™

DSD Downloads & More — Your One-Stop Download Shop



AURALiC Aries
Bridge Streamer



Calyx M
DSD Portable Music Player



Sony HAP-Z1ES
Hi-Res Music Player with 1 TB HDD



AURALiC Taurus II
Balanced Headphone Amplifier



Meridian Explorer 2
USB Audiophile DAC



Sony PHA-3
Hi-Res Portable DSD
DAC/Headphone Amplifier



AURALiC Vega
Digital Audio Processor



Chord Electronics - HuGo
Mobile DAC/Headphone Amp
D/A Converter or Processor



TEAC UD-501
PCM & DSD USB DAC

RECOMMENDED HEADPHONES



Audeze LCD-XC
Reference
Planar Magnetic
Headphones



Sony MDR-Z7
Hi-Res Closed
Supra-Aural Dynamic
Headphones



Sony XBA-Z5
Vertical In-The-Ear
Hybrid Earbuds



Grado PS1000e



Sennheiser HD700



The World's Largest Selection Of Audiophile Recordings

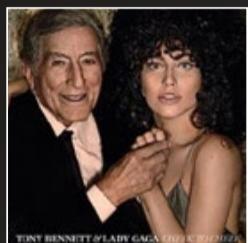
ACOUSTICSOUNDS.COM | SUPERHI-REZ.COM | 800.716.3553

Join the Audio Revolution

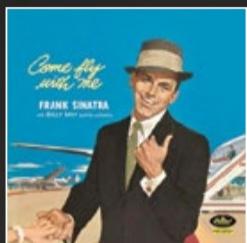
ACOUSTIC SOUNDS **SUPER HI-REZ**™

DSD Downloads & More — Your One-Stop Download Shop

Don't Miss Out On The Best Sounding Downloads!



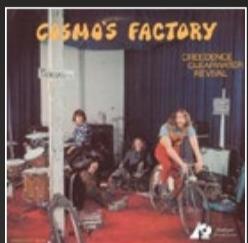
Tony Bennett
& Lady Gaga
Cheek To Cheek



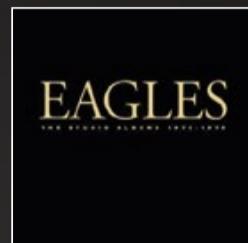
Frank Sinatra
Come Fly With Me



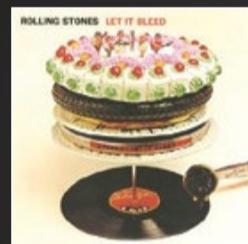
Frank Sinatra
In The Wee
Small Hours



Creedence Clearwater
Revival
Cosmo's Factory



Eagles
The Studio Albums
1972-1979



The Rolling Stones
Let It Bleed



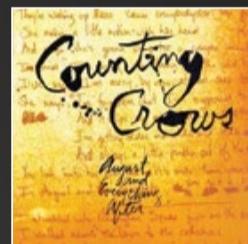
Simon & Garfunkel
Bridge Over
Troubled Water



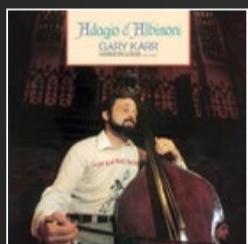
Simon & Garfunkel
Parsley, Sage, Rosemary
And Thyme



The Carpenters
Singles 1969-1981



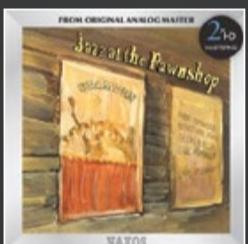
Counting Crows
August And
Everything After



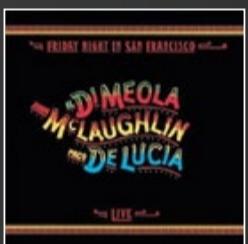
Gary Karr
Adagio D'Albinoni



Shelby Lynne
Just A Little Lovin'



Various Artists
Jazz At The
Pawnshop



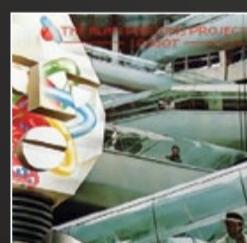
DiMeola, McLaughlin
& DeLucia
Friday Night In San Francisco



Stan Getz &
Joao Gilberto
Getz/Gilberto



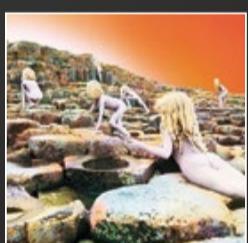
Steely Dan
Gaucho



The Alan Parson Project
I Robot



Norah Jones
Come Away With Me



Led Zeppelin
Houses Of Holy



Miles Davis
Kind Of Blue



The World's Largest Selection Of Audiophile Recordings

ACOUSTICSOUNDS.COM | SUPERHI-REZ.COM | 800.716.3553

Perfect focus

NEW GEAR, TOP NEWS, HOW TO, AND MORE...

Edited by Claire Crowley

OI' Blu Gets an Upgrade

Ultra HD Blu-ray...At Last

2015 is shaping up to be a banner year for home entertainment as the promise of pristine 4K images from a new generation of Blu-ray players sparkles on the horizon. As a follow-up to Rob Sabin's technical overview of the Ultra HD Blu-ray (Track One, April 2015), we spoke with Ron Martin, vice chair of the Blu-ray Disc Association's U.S. Promotions Committee and vice president/director of Panasonic Hollywood Lab to learn more about this highly anticipated product launch.

S&V: How would you characterize the launch of UHD Blu-ray?

RM: Judging by the excitement generated at CES in January, the Blu-ray Disc Association (BDA) thinks this is big news for video-philes and consumers alike. The task force, comprised of hardware and software manufacturers, has been extremely collaborative and is very much looking forward to its launch.

Ron Martin



S&V: Early reports have said the first players will hit the market late this year. Is this time frame realistic?

RM: Yes, many of our manufacturers see it as realistic. Panasonic had a working prototype at CES in January. In terms of software, the studios have said they would be able to release titles by the end of the year.

S&V: How close is the UHD BD standard to completion?

RM: The UHD BD standard will be complete by late spring/early summer, and it will include all of the legacy specs, including 3D. But just to clarify, it will include Full HD Blu-ray 3D, not 4K 3D.

S&V: How much better will UHD images look on disc compared with the best we can expect from streaming today?

RM: Ultra HD Blu-ray is not just a format for the high-end adopter but will be distinctive and visibly rewarding for even the casual viewer. When the consumer enjoys the benefits of Ultra HD Blu-ray's wider color gamut capability and 10-bit encoding, combined with the potential for high dynamic range, the resulting image will offer a significant improvement over current Blu-ray technology that even the most casual viewer will notice.

S&V: What is the most compelling aspect of the UHD BD standard? Things like expanded color space or high-dynamic range?

RM: The most compelling aspect is that it has the capability to include all of those things combined. This leaves the choice to content

publishers and creative filmmakers of how much of those realms to dive into and opens up all sorts of possibilities. Currently no TV will support the Rec. 2020 expanded color space, but manufacturers have it on their road map and progress is being made. Because Ultra HD Blu-ray can carry the full 2020 signal, it will be ready to deliver that signal to TVs and displays as soon as they are capable.

S&V: Can you explain UHD BD's "digital bridge" option?

RM: Final details are still being worked out, but there are two significant elements. The first will allow the content stored on the Blu-ray Disc to be exported and played on authorized devices such as tablets, media players, or smart televisions. The second will enable high-definition content stored on a "digital bridge-enabled" Blu-ray Disc to be copied onto local storage media, such as a hard drive in the player or an external drive connected

to the player. This will create a digital copy that is bound to the player and allows for a localized library of the consumer's favorite and most-often-played titles to be stored in the player.

S&V: Do you think UHD Blu-ray will be the last physical disc format?

RM: As we have always said in the context of HD, especially 4K UHD, the BDA believes packaged media and streaming will coexist because they play very different roles in the ecosystem. The quality of the picture from streaming varies with the quality of your Internet connection. In many areas, there just is not enough bandwidth to stream an HD movie without buffering issues or picture softening, as we saw with the Superbowl this year. And what Ultra HD Blu-ray will be able to achieve in terms of dynamic range and color gamut will be far beyond what today's residential bandwidth will permit. When consumers want to watch a high-definition movie, they want a reliable, premium-quality experience, and that is what Blu-ray Disc provides.—Bob Ankosko

An extended version of this interview appears on soundandvision.com.



This Just In...

By Mark Fleischmann

Comcast Poured Concrete

for its Innovation and Technology Center in Philadelphia. The 1,121-foot tower will be the tallest in the country outside New York and Chicago...



DirecTV's Yaveo Streaming

service is aimed at Spanish-speaking subscribers in the U.S. using PC, Mac, or Android, with iOS, Xbox 360, and other platforms to come. Cost is \$7.99/month with a one-month free trial...

Dish's Hopper Can Restart

programs, as long as they're in the VOD library, thanks to a software upgrade to the HD-DVR. Closed captioning is now available with a single press of the remote's green button...

Global TV Shipments Rose

5.5 percent in 2014 and will clock another 3.7 percent rise in 2015, says Intell Consulting of China. Samsung and LG together nabbed 39.3 percent of the 2014 market share...

Movie Attendance Plummeted

in 2014, with a 6 percent drop over the previous year, and the lowest ticket sales since 1995. But we're still sorry we missed the January film exhibitions of *The Wizard of Oz*, coinciding with the movie's 75th anniversary...

TabletTV

uses a broadcast-TV tuner called the TPod to record programs and distribute

them to tablets and other Wi-Fi devices. Launched in San Francisco for \$90, it uses KOFY station bandwidth to offer on-demand programming...

Live TV Gets More Tweets,

says a Nielsen study of Twitter TV activity. Sixty-eight percent of TV-related tweets take place within a three-hour window of a program's airing...

Hulu and Fox

are bringing FX and FXX to the streaming service without a cable subscription. Access to FX Now apps is also included...

Cox Is Going All-Digital

starting with its systems in Connecticut. Reclaiming spectrum currently used for obsolete analog channels will lead to new services, and those still using analog TVs can get the Mini Box, a digital-to-analog converter...

Cox Homelife,

the cable op's home security and automation service, has rolled out in Baton Rouge. It began in Arizona circa 2011 and will complete its rollout in Florida and Georgia early this year...

Comcast's Talking Guide

for its X1 video platform announces channel names and numbers, time slots, and program details. This enables folks with vision or reading disabilities to program the DVR and order VOD...

Schedule Comcast Service Calls

with the My Account app for

iOS and Android. The app starts with troubleshooting, and if that doesn't work, it schedules a time for a rep to call you...

Roku's Comcast Subscribers

now have access to HBO Go and Showtime on their favorite streaming platform. Amazon has also signed HBO Go for FireTV, and soon for the Fire TV Stick—but that doesn't apply to Comcast or Charter subscribers...

DirecTV Raised Rates

by 5.7 percent in 2015 starting Feb. 5. The hikes vary from 3.5 percent for the Choice package to 6 percent for Ultimate TV, and regional sports surcharges are up as much as \$2.14...

Hopper Does Netflix Directly,

making Dish Network the first U.S. pay-TV operator to do so. Netflix has similar deals with cable providers—outside the U.S., that is...

Netflix Offline Playback

is "never going to happen," the company says, shooting down a rumor. So if you don't always have a video-worthy connection, you're out of luck...

Amazon Prime Now Offers Ultra HD

to Prime members in the U.K., following Netflix's UHD rollout. Binge on Amazon original series or download Sony movies for £14.99...



A "Live Channels for Android TV"

app is nigh. However, it was uncertain at press time what channels and pay-TV services would be supported...

MTV Now Has a Live Feed

on its Android and iOS apps. It includes both MTV and MTV2...

Xbox One Now Streams Music

videos from Pandora in the U.S. and Vevo in 14 countries. The game console also streams Bravo Now and Telemundo Now plus movies from Popcornflix...

Russound Added Spotify

to its XStream X5 distributed audio controller, DMS-3.1 streamer, and the new

MCA-88X streaming multizone digital amp through firmware updates. Existing streaming options include Pandora, SiriusXM, TuneIn, and vTuner...

Optoma Acquired NuForce,

combining the former's video technology with the latter's audio technology. Look for amp, DAC, and streaming products that complement projectors...

The High-Resolution Audio Logo

developed by the Japan Audio Society is now eligible for worldwide use by members of the Consumer Electronics Association. You can go see what it looks like in our hi-res audio how-to feature on page 36...



Handson

Dolby Atmos Mobile

By Chris Chiarella

Atmos to Go

DOING ITS PART TO MAKE SURE you never have to be without object-based audio, Dolby is dropping its newest format, Dolby Atmos Mobile. Like Dolby Atmos for the home and for the cinema, this portable version aims to render a more detailed, more lifelike soundfield from specially mixed/encoded software. Unlike the previous versions, Dolby Atmos Mobile does not require a specially wired theater, or newfangled or additional loudspeakers. Instead, it's designed to work with any headphones. The technology relies on Head-Related Transfer Functions, taking advantage of the fixed positions of the stereo drivers left and right as they expand the soundtrack's spatial information. For this reason, a wired or Bluetooth speaker cannot reproduce the Atmos Mobile effect.

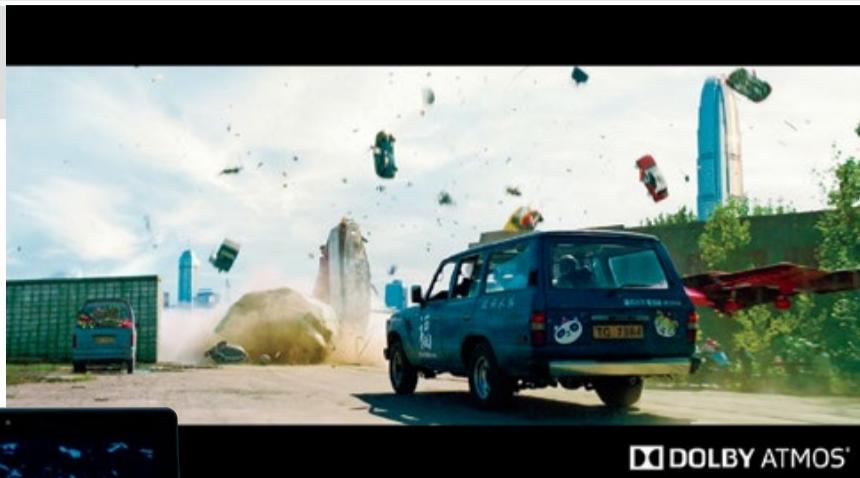
Frankly, I love the idea of enjoying a movie on-the-go with step-up audio like this. For my evaluation, I called up a pair of Audio-Technica

Sonic Fuel CKX7iS in-ears, plus my go-to Sennheiser HD 475 on-ears and a pair of original Beats Studio over-ears. Quick tip: If you're using a protective case, and your 'phones have a fat plug, be sure that it's all the way in the port, nice and snug.

How Do I Get It?

At press time, the Fire HDX 8.9 (Fourth Generation, specifically) is the only device to support Dolby Atmos Mobile, via proprietary renderer software inside Amazon's flagship tablet. Atmos-enabled content is coming soon, with three free demo clips currently available, each about a minute long.

To find the demo clips in the tablet's built-in Amazon Instant Video storefront, simply search for "Dolby Atmos," and they pop right up. You can then download them directly to the device. They include "Audio-



sphere," a digitally animated music video; "Amaze," Dolby's live-action rainforest showoff reel; and a scene from *Transformers: Age of Extinction*.

So... How Does It Sound?

As I expected, the bigger the headphones, the better the experience. Even compact earbuds undeniably reap the benefit of Atmos Mobile, but they were the least impressive of all the styles I tried. They're certainly not as generous in their rendering of the enhanced soundfield. Even so, Dolby's object-based approach to audio as individual elements—musical notes, nature sounds, heavy metal crashes—yields at the very least a newfound spaciousness, beyond

anything I'm used to from mobile video. The pleasant little "Audiosphere" ditty syncs beautifully with the onscreen action, and while there is some illusion of height, more pronounced is the wonderful sense of depth throughout.

At 24 seconds into "Amaze," even with the earbuds, I experienced the convincing semblance of the unseen bird flapping around behind me, from one side to the other and back again. The demo is exquisitely layered, sonically, and upon my many repeat viewings, I could pick out individual insects and such. However, I had to switch to on-ear and over-ear headphones to unleash the dynamic range I was expecting, and decent over-ears seem necessary to reproduce the serious bass on this clip. Of course, another benefit of over-ears is the isolation from environmental distraction, to further immerse you in whatever you're watching.

The Big Guns

In the *Age of Extinction* scene, all hell is breaking loose in China, and when the enormous propeller bounces up and over our heroes' car at eight seconds in, I could almost swear I heard it move up and above my head, bouncing first in front and to the left, then behind and to the right. This was the most engaging example because it uses Atmos-enhanced audio to help tell an actual story. The Dolby Atmos Mobile experience is comparable to a good surround soundtrack. My ears were able to hone in on individual objects: an exploding cargo ship here, a crashing neon sign there. These demos bode well for the future, when full-length titles come to market.



The Connected Life

JOHN SCIACCA

The Internet of Things Is Upon Us



While video manufacturers were busy demonstrating their takes on the technologies best suited for UHDTV, espousing the relative merits of High Dynamic Range and wider color gamuts, and discussing the all-important question of 4K content delivery methods, the rest of this year's International Consumer Electronics Show seemed concerned with making sure practically every device imaginable will be connected to the Internet in some form or fashion.

The so-called Internet of Things (IoT) (or the slightly less awkwardly phrased "Internet of Everything") was an undeniable trend at CES this year, with practically everything being connected in some manner. In the Central Hall, a large pillar in Qualcomm's booth asked, "When will anything, anywhere be connected?" and "When will everything speak to the next thing?" It would appear the answer to both is, "Soon!"

The IoT took front and center stage during Samsung's opening keynote speech where company president and CEO, Boo-Keun Yoon,

Practically everything will be connected in some manner.

voiced his company's commitment to connected devices, announcing plans on investing more than \$100 million in its developer program this year alone. Yoon went on to say that 90 percent of Samsung's products will be connected by 2017 with 100 percent of Samsung's products being IoT-capable in five years.

Nowhere was the IoT more present than at Eureka Park, a section of CES dedicated to smaller companies displaying up-and-coming technologies. In fact, you practically couldn't take two steps in any direction without running into some new take on a "smart," connected product, many using technology to address old issues in new and innovative ways.

Some IoT devices that caught my attention included a toothbrush that tracks your kid's brushing times and uses games to encourage longer and better brushing; a device that floated in your swimming pool to track water temperature and chemical levels and suggests what to add to properly balance the water; irrigation systems that monitor local weather patterns to



avoid over- or underwatering; home brewing kits that monitor the cooking times and temps and hop additions of your current batch as well as suggesting new recipes; a smart and safe outlet that only passes current when an electrical device is plugged in and not, say, a knife or toddler's finger; a smart battery that enables any smoke detector to report trouble or when a battery is getting low; a high-tech rifle that lets other hunters or military operators remotely view through the scope; various sensors, detectors, and monitors that alert you to water leaks, carbon monoxide, smoke, motion, and temperature changes; wearables that monitor your exercise and sleep patterns and even let you know when you've had too much to drink.

Having hundreds of smart devices is all well and good, but for the IoT to truly succeed and be beneficial, these individual devices will need to work together and not be technological islands unto themselves. Having to open numerous different apps on a smartphone to lock your doors, turn off the lights, adjust the temperature, turn off the entertainment system, and arm the security system is far less convenient than a single Away button that does it all for you. Or just walking away from the house and having it automatically perform these functions.

While various automation systems like Control4, Crestron, Elan, and Savant can do these sorts of things today, the proliferation of devices from a huge variety of manufacturers will require some kind of unified communication for the IoT to truly succeed. Perhaps this will be one of the features of Apple's forthcoming HomeKit.

When I described the IoT trend to my dad, his immediate response was, "Why in the world would I want my refrigerator talking to my washing machine?"

And, the truth is, you probably wouldn't. But what if your home and personal devices were sentient enough to always know what was happening in your life and smart enough to help you? What if, when you pulled a pizza out of the freezer, it set a reminder for the next time you went shopping to buy another pizza, alerted the oven to preheat to the right temperature, and told the HVAC system to drop the temp a couple of degrees while the oven was on? What if your home could know when you were coming home and automatically prepare the house for your arrival? These are the dreams of the truly IoT lifestyle. And it's not nearly that far off.

City Demands Cable Competition

The city government of Lincoln, Nebraska wants its citizens to enjoy the benefits of cable competition. So it is allowing a second cable operator onto the playing field. And guess what? The incumbent cable operator isn't happy about it.

During a public hearing before the city council, Time Warner Cable's lawyer complained that the city's new franchise agreement with Windstream Communications would violate its existing franchise agreement with TWC by being "more favorable or less burdensome when taken as a whole," reports the *Lincoln Journal Star*.

The devil is in the details. TWC says it is required to provide five public access channels, whereas Windstream would be required to provide only four. Ah, but currently TWC is providing only four. TWC also complains that Windstream is being asked to pay less per subscriber for public access capital needs—but TWC refuses to say exactly how many subscribers it has, so how much it's paying per subscriber is unclear.

The most concrete difference between the two franchises seems to be that TWC is required to do business with any city resident who requests service, while Windstream's service target is 45 percent of the city initially and 80 percent within 15 years.

The Lincoln City Council listened to both sides, then granted Windstream a franchise to compete with TWC. Shortly afterward, the new cable operator announced it would start service by the end of March, a few months earlier than anticipated, reporting that its call centers were "hearing a lot of pent-up demand."

Windstream is not exactly puny. A Fortune 500 and S&P 500 company, it offers telecom and broadband services in 48 states using a combination of DSL and fiber, and is the dominant land-line company in parts of 18 states. Time Warner is the nation's third largest cable operator. With its pending absorption into Comcast, it would become part of the nation's largest cable operator. Is it possible that TWC could stand a little competition?—MF



Let It Shine Two Award-Winning Home Theaters

By Bob Ankosko



THE MUSIC

industry has the Grammys to recognize

outstanding contributions to the art of song composition. The Custom Electronic Design & Installation Association, aka CEDIA, which you might know from our coverage of the annual CEDIA Expo, has the Electronic Lifestyles Awards to honor the creativity and technical skill behind some of the most advanced home entertainment and home automation systems on the planet. Here we profile two of the 14 home theaters that made the cut in 2014.—Bob Ankosko

Stellar Screening Room

Gold Award: Best Home Theater, \$450,000 & Over

Well before home versions of the Dolby Atmos and Auro-3D next-gen surround sound formats were even announced, the custom installation masters at Dallas' HomeTronics were busy building what would be the country's first Auro-3D-equipped home theater, pictured below—a project that took three years to complete. The homeowner wanted a dedicated space with three rows of seating and a wall-to-wall screen that could be masked for optimum viewing from any seat in the house. Beyond that, he wanted to be able to watch multiple sporting events simultaneously and support a larger-than-life multi-user gaming experience with four Xbox consoles (a multi-view processor actually allows tiling of up to eight images). Display Development's 4K Digital Film 10B projector was chosen for its impeccable picture quality and ability to display



four 1080p images at once on the 15-foot-wide screen.

Knowing that sound was a top priority, HomeTronics recommended a unique 15.1-channel system based on the Auro-3D surround format that was just starting to find its way into theaters across the globe. The owner signed off on plans for a spectacular array of CAT (California Audio Technology) speakers: 30 in-wall modules—including 17 to accommodate the height and overhead ("Voice of God") layers required by Auro-3D—are strategically mounted in an "interior acoustic wall" along with 14 subwoofers, all powered by 55 channels of CAT power. Four of the subs are encased in resonance-killing concrete below the screen, and 10 are placed around the room to ensure uniform bass everywhere. A custom-programmed Savant system provides easy iPad control of everything, including a DirecTV receiver, Oppo Blu-ray player, and Prima Cinema server that delivers

first-run movies to this stellar screening room.

Mogul Magic

Bronze Award: Best Home Theater, \$450,000 & Over

The home theater gurus at Los Angeles' Bradford Wells + Associates were tasked with designing and installing a screening room for the president of a major movie studio, shown above. In contrast to what you might expect, the mogul wanted a professional-grade theater where he could view DCPs (digital cinema packages) and dailies from ongoing productions, but he also wanted a comfortable space where his family could watch TV and Blu-ray movies, play Xbox video games, and stream programs via Apple TV. The result is the elegant yet understated theater shown here.

Built to exacting digital cinema standards, the acoustically treated (and isolated) room is outfitted with a secure movie server from Doremi, a DCI-compliant NEC projector

(mounted in a custom "hush box"), and a 12-foot-wide Seymour Screen Excellence screen with side-screen masking to accommodate different aspect ratios. The system was painstakingly calibrated by industry experts to ensure dead-accurate audio/video reproduction, and everything is concealed to preserve the room's warm atmosphere. A suite of nine Wisdom Audio planar-magnetic speakers and eight JL Audio subwoofers reside behind the perforated projection screen and acoustically transparent wall panels, and a formidable lineup of electronics gear is housed on two racks in a climate-controlled closet. The list includes a Crestron system (which facilitates iPad theater control), Oppo Blu-ray player, Marantz AV7701 7.2-channel surround processor, Ashly DSP matrix processor/crossover, and four C Series professional amplifiers from LabGruppen with a combined potential output of 7,600 watts. Lights, camera...action!



Audio Answers



I recently purchased a pair of **Definitive Technology BP 8060 ST** tower speakers with built-in subs. They are connected to my Sony STR-DH750 receiver. What would be the correct speaker setting if I used the 8060s as my front speakers (set to Large) and continued to use my Sony sub for LFE instead of the ones built into the Def Tech towers? The rest of my system consists of two Infinity rear surrounds and a center speaker, plus two Bose speakers mounted on the front wall that I use for height speakers.

Kevin Bolin / Houston, TX

Since the STR-DH750 is a 7.1-channel receiver, and you're using the two extra amp channels for height speakers instead of back surrounds, the correct speaker setting would be 3/2.1. You might want to consider ditching your current sub and using the ones built into your Def Tech 8060 tower speakers for LFE purposes instead, however. Any speaker system with two 10-inch subs, each powered by a 300-watt amp, should provide enough low-end oomph for all but the most bass-intensive applications, and something tells me that your Sony subwoofer isn't going to cut it. If you still require more bass extension and output than your current system provides, I'd suggest looking into a super-sub from a specialist subwoofer manufacturer like SVS or Hsu Research.

One more suggestion: You may want to consider switching out your center and surround speakers with models that match

Can I use two different brands of subwoofers in my theater?

your front towers. Using a medley of different-brand speakers in a multichannel system can result in tonal mismatches as the sound travels across the various channels.

Can I use two different brands of subwoofers in my home theater?

Alphonse Michelet / via e-mail

Yes. But if you really want smooth, evenly distributed bass, it would be a better idea to use two subs with the same specs (driver size, amp power, etc.). Why? An action



movie with serious LFE will more quickly max out the capabilities of a moderately powered sub with an 8-inch driver than a more amply powered one with a 12-inch driver sitting in the same room. When the volume hits a high level, the larger sub will be able to gracefully handle the strain, whereas you might hear port noise, distortion, etc. coming from the smaller, less powerful sub. This will have the effect of physically localizing its sound—always a bad thing.

I'm considering buying a home where the builder has options for structured wiring. The markup on this option seems a little high (a few hundred dollars to go from 16-gauge to 12-gauge speaker wire, etc.). I know the best time to run wire is during the construction process, but what is the best way to accomplish it: builder, custom installer, or DIY? One major concern is that the exterior walls will have spray-foam insulation, so once that's in, I'm thinking those walls are hands-off.

Mike Sellers / Tomball, TX

There's no reason to not take advantage of a structured wiring option if the builder of your new home provides it. Cutting into walls to run wire after the fact can be complicated and costly—not to mention near-impossible if the walls are insulated with spray foam.

As for the choice between using a builder or a custom installation pro to run cable, keep in mind that your builder is likely to just hire an electrician to do the work. A custom installer, however, would ensure things like audio cables being separated from power cables, which could otherwise add hum and noise to the sound, and perhaps recommend additional HDMI or Cat5e/6 cabling to accommodate long HDTV signal runs, wired Internet feeds, or other future needs a builder will never think about. As for the price difference between 16- and 12-gauge cable, that step-up typically is a pricey one. Your best bet would be to run 16- or 14-gauge cable for wholehouse audio, and to limit heavy 12-gauge to the in-wall/in-ceiling speakers in a dedicated home theater room.

Streamers Say Yes to MQA

A promising new encoding method from Meridian, maker of world-beating active loudspeakers and other digital audio hardware, has been adopted by Tidal and 7digital, two major forces in music streaming. Tidal is the Norwegian company whose lossless 16-bit streaming has gotten audiophiles interested in streaming. 7digital operates music download and streaming services for itself and other parties and was the first company to offer DRM-free MP3 downloads in 2008.



The new technology is called **MQA**, or **Master Quality Authenticated**, a method of "audio origami" that folds down hi-res audio files (up to 192-kHz/24-bit) to roughly the same 1.5 Mbps data transmission rate as CD-quality audio—which is kind of like sucking Lake Erie through a straw. The result, says co-inventor Bob Stuart, is "a clear, accurate, and authentic path from the recording studio all the way to any listening environment—at home, in the car, or on the go." In a New York demo, MQA sounded astonishingly transparent (though the use of a perfectly tweaked Meridian system surely helped).

MQA can be streamed or downloaded in existing lossless file formats, such as FLAC. And it is backwards-compatible with existing equipment, though an MQA hardware or software decoder is required to get the full benefit. Though Meridian's Explorer USB DAC and Prime headphone amp are among the first MQA-compatible products, Meridian hopes to license the technology to other manufacturers.

The tricky part of this is not technology but *provenance*, an issue for hi-res audio software retailing in general. How do you know the master for that potentially costly MQA download or stream is the best possible digital or analog source, as opposed to a lower-resolution CD-quality or multi-generation analog copy? That's the question Meridian, its partners, and other hi-res purveyors (such as Pono Music) have to answer. Someone has to do the research and authenticate the result, album by album. Otherwise, all the fancy audio encoding methods in the world won't truly deliver a good recording at its best. And, of course, some recordings are just not worth the trouble: garbage in, garbage out.

But MQA is one of the most promising new audio technologies we've seen in a long time. Done right, it might accomplish the long-dreamt-of goal of getting listeners—even streaming listeners—past the velvet rope, into the studio, hearing what the artist intended.

—MF

Analog ...



Or Digital ...



Audio Is Fragile, Audio Deserves Respect

As technology progresses, we are continually presented with new and interesting ways to transfer an audio signal. The frontier keeps moving; the details change. However, one fact endures: In every new application and in every new way of packaging sound, music remains vulnerable to distortions that diminish its beauty. Love, respect, intelligent engineering, and purposeful design must be applied at all times.

In both the analog and digital realms, AudioQuest has spent the last 35 years exploring and expanding the frontier of cable design. We share the dream that transferring audio will someday be fully robust and immune to degradation. In the meantime, we are very pleased to know that our cables—whether for just a few dollars or for state-of-the-art performance—can make a meaningful, beautiful difference in sound quality.

audioquest®

PERFECT FOCUS

Signals

KEN C. POHLMANN

Are You Bullish on Vinyl?



So anyway, I was standing in line at my local FedEx store. I'm there quite a bit, returning review products from whence they came. A nice lady comes up behind me with a box measuring about 12 x 12 x 12. It looks heavy, so I offer to hold it for her. "I hope it's not too heavy," she says. "It's my old records—for my 16-year-old nephew. He loves records." Hmm, I think to myself. Is this an omen—has she handed me some kind of business opportunity?

I don't know what her listening tastes are. The box might have had virgin 180-gram imported Beatles, or well-worn copies of Mantovani and His Orchestra. Chances are, the nephew might never platter these particular discs. But the point is, he is enamored enough of vinyl to persuade his aunt to send him her stuff. He's one of those kids, and I'm sure you can relate, who craves as much occupied linear shelf footage as possible. Files are fine, but shelf footage is cool.

The funny thing is that right after I got back from the FedEx store, I picked up the *Wall Street Journal* and bam!—right there was an article titled, "The Biggest Music Comeback of 2014: Vinyl Records." As you might expect, the *WSJ* usually focuses on the business aspect of things, and this article contained some good business news, and some bad. The good news is that sales of "old-fashioned vinyl records" were up a healthy 49 percent last year. In fact, the sales figures for the last several years are impressive. From a sales nadir of about 1 million units annually in 2005, 2006, and 2007, sales climbed nicely to over 4 million in 2012, 6 million in 2013, to 8 million in 2014. Who is buying all this plastic? The *WSJ* cites "younger people, especially indie-rock fans." Also, clearly, there are other analog enthusiasts as well.

The bad news is that even as vinyl booms, the vinyl infrastructure is fading. According to the *WSJ*, "the creaky machines that make them [LPs] have not been manufactured for decades."



Another bad sign: An estimated 90 percent of the raw vinyl comes from one Thai company, and there are no vinyl suppliers left in the U.S. Furthermore, according to the *WSJ*, the 15 or so domestic "still-running factories" often experience breakdowns and materials shortages. Pressing plants must search worldwide to find old presses that can be refurbished and put back online. Another even more serious obstacle: Many of the artisans who have the analog skills to make quality records are reaching retirement age, and their decades of uniquely accumulated experience will retire with them.

Problems aside, the sales trend seems pretty strong, and materials shortages and lack of new equipment raises the question of why entrepreneurs haven't stepped in to fill those voids. In many other industries, those kinds of opportunities would quickly attract investors, but so far, significant investment capital for vinyl apparently hasn't appeared. Perhaps that's because the vinyl business is small, representing about 2 percent of the music business. Or maybe the smart money is waiting to see if vinyl sales are sustainable.

So, when I see a woman mailing LPs

Old-fashioned vinyl was up 49 percent last year.

to her eager nephew, is that a lucky omen of a business opportunity, or just another of life's daily coincidences? I'm inclined to think the latter. But, you might think differently. Put another way, and given the strong sales figures, do you think vinyl is just a hipster fad, or does it represent a long-term business opportunity?

Would you start a business that contracted with a chemical company to supply vinyl? Maybe start manufacturing custom record presses? Or go all-in and open your own LP pressing plant? Sure, everyone likes to spin a record now and then, but would you be willing to step up and invest your cold, hard cash in hot vinyl?

Introducing NuPrime Audio and Celsius Sound



NuPrime uDSD

USB powered PCM384, DSD256 DAC and Headphone Amp

- Play high resolution audio up to PCM 32-bit/384kHz and DSD256.
- Coaxial S/PDIF and 2V RCA Analog outputs.
- Powerful headphone amp output.
- Most advanced USB powered portable DAC, no external power supply required.

MSRP \$179

www.nuprimeaudio.com



Companion One

Portable USB DAC (PCM384, DSD128) & Headphone Amp

- WiFi Audio Streaming 24-Bit/192kHz.
- Portable DAC with 6000 mAh battery.
- Supports Windows, Mac, iOS and Android (>4.1 with OTG) Devices with custom USB cables.
- Airplay and DLNA support for Wireless Audio.

MSRP \$595

www.celsus-sound.com



Contact us | sales@heapaudio.com

The CINEMA SHOP®

THEATER CURTAINS

Custom Home Theater Curtains, plus the highest quality commercial drapery and tracks. Virtually anything you can dream, we can create.



THEATER SEATING

Not all seating is created equal. Hardwood frames, commercial quality springs and foam, plus 100% top grain leather provides the comfort you deserve and is a better long term investment.



STAR PANELS & LED LIGHTING

Advanced star ceilings with shooting stars, meteor showers, 3D LED Moons, and even sound



THEATER DECOR

Everything for your Home Theater but the electronics. Call to speak with a product expert, or to receive our free color catalog and informative CinemaShopper newsletter.



COMPLETE THEATER INTERIORS



Visit us at CINEMASHOP.COM or Call Toll Free 1-866-243-1001

Handson

Bowers & Wilkins C5 Series 2 Headphone

By Steve Guttenberg

Shine a Light

PRICE \$180

I DOUBT THE ORIGINAL BOWERS & Wilkins C5 that debuted in 2011 was ever confused for any other headphone. I loved its sharply angled, cylindrical aluminum earpieces and looped cables: They marked the C5 as a true original. The new C5 Series 2 doesn't look much different. The biggest change is one you can't see: The 9.2mm drivers are all new. The headphones' silicone ear tips now provide a snugger fit, and the old silver/gray cable has been replaced with a black one. The new inline mic/remote has a better tactile feel. You can take calls on Androids and iPhones, but the remote

AT A GLANCE

Plus

- Bright and clear sound
- All-new 9.2mm drivers
- Bowers & Wilkins design flair

Minus

- The C5 S2's cable may rub against your ears



only works with iPhones. Bowers & Wilkins' headphone carry cases are classier than most, and the suede-like one that comes with the C5 S2 looks sharp.

Bowers & Wilkins calls the C5 S2 a semi-open design, implying that the driver vents through the gray "Micro Porous Filters" fitted to the beveled end of the earpieces. In-ear headphones can sound

a little claustrophobic or stuck inside my head, but the C5 S2's imaging is more open than that of most in-ears.

The earpieces' looped cable dressing is no styling gimmick. The loop stabilizes the C5 S2's fit by gently resting against the folds of your outer ear. There is one catch to the unusual cable orientation: The cable exits the earpiece body heading straight down, and you may find the cable pressing against your earlobes. However, ear shapes vary—a lot. Most folks won't have a problem, but one of my friends experienced some discomfort. On the upside, the C5 S2 does a good job keeping outside noise at bay.

I had a set of original C5 in-ears on hand for this review, and I was taken aback by how different the new C5 S2 sounded. The original is sweet and warmly balanced, so even harsh MP3s were easy on the ears. The C5 S2 is more transparent, clear, and accurate, so the best recordings reveal more of their true sound. Take trombonist Wylye Gordon's *Dreams of New Orleans* CD. The original C5 adds considerable

weight to the bass drum and tuba, making it a little too rich for my taste. The C5 S2's bottom-end oomph is still strong, but it's tighter, so it clarifies the sound of the drums. There's less fullness, but the bass is more accurate and better balanced. That tonal shift frees up the midrange; it's a more neutral sound.

Brian Eno & Karl Hyde's recent *Someday World* album has been in constant rotation in my house for the last few months, so I was curious to see how the C5 S2 would unravel its dense mixes. The interplay of jittery rhythms and spiky electronics lit up my eardrums, and the low, pulsing beats were flab free. To put the C5 S2's sound in context, I popped on my Hifiman RE-600 in-ear headphones (\$200), and the RE-600 had an even tighter, more

RATING

Bowers & Wilkins C5 Series 2 Headphone

Performance

Build Quality

Comfort

Value



THE VERDICT

Bowers & Wilkins' engineers revised and tweaked C5 Series 2 in-ear headphone sounds better than ever.

accurate low end, stronger dynamics, and retrieved more of the subtlest details of my recordings. The downside to the RE-600's extra detail is that bright recordings can sound strident; the mellower C5 S2 softens the edge.

Up to this point, all of my listening tests were done with my iPod classic, but just as I was finishing up, I plugged the C5 S2 into Sony's extraordinary PHA-3 portable headphone amp/DAC. Oh, boy! The C5 S2's soundstage blossomed, and transparency and low-end authority bumped up a couple of notches. Feed this headphone well, and it just gets better and better.

The Bowers & Wilkins C5 S2's sound consistently riveted my attention. That, more than anything, is what separates the great from merely good headphones.

SPECS

Type: In-ear • Driver Size: 9.2mm •

Weight (Ounces): 0.7 • Impedance: 32 ohms • Sensitivity: 115 dB/V

It's here. The redefinition of your audio and video experience. The Emotiva XMC-1 combines precision 7.2 HD surround decoding, balanced audiophile multichannel preamplification, and full 4K video management with the power of Dirac Live™. Whether you're running the latest movies or high-definition audio, get ready for the most powerful, immersive experience you've ever had.

The all-new XMC-1. Stunning performance now. Modular and upgradable for the future. Covered by a 5-year warranty. Designed and made in the USA at our Tennessee production center.



Redefine your experience with the XMC-1. \$1999.

Ready, Set, Tap



I recently hung the new \$14.97 60-watt Cree Connected LED Bulb on the wall above my easy chair so that whenever an idea entered my brain, I'd be able to tap my iPad and make a light bulb go on above my head. (For those unaware, the Cree is a Zigbee- and Wink-compliant light; mate it with a compatible smarthome hub, and you can control it from your phone or tablet.)

Cascading ideas from the land of consumer electronics have lately been causing me to flick on the Cree so often that I feel like I'm basking under a strobe. What we traditionally think of as hardware, the shiny things that stack up in a home theater, are relinquishing their starring spotlight these days to a new world of apps—applications that reside on mobile devices and offer up all sorts of opportunity for advanced control or an enhanced viewing or listening experience.

It's not that flashy equipment like Ultra HDTVs that curve on demand aren't cool. It's that the "It" Girl of the moment is spelled "IoT," as in the Internet of Things, wherein everything and everyone is connected. There's no shortage of wacky ideas, be it the Wi-Fi-enabled baby bottle or a planter that texts you when it needs water. Still, with so many products out there, an app that runs on your mobile

What the IR remote was to the last century, the Wi-Fi touchscreen is to this.

device and makes it easier to operate your home theater equipment or adds new features can influence a buying decision. All else being equal, if a CE manufacturer is offering a free app for its networked A/V receiver while a competitor doesn't know Android from iOS, which one are you going to choose?

Still, there is a right and a wrong way to do this. Some manufacturers' apps are little more than a touchscreen replacement for the dedicated remote supplied in the box, and possibly a very poor one. As we all know from experience, frustration ensues when a badly designed interface forces you to burrow deep through a hierarchical menu or press the same button repeatedly because an option is chosen serially rather than directly.

With a hard remote, a manufacturer runs the risk of putting in too few buttons (necessitating multiple presses) or too many (result-

ing in complexity)—both mistakes that can just as easily be made with an app. But the app developer has the advantage of soft (screen) buttons that change with the mode, and a well-designed app will make navigating smoother. Buttons that don't operate from a particular mode will be grayed out or gone. There's a clear path to back up a step or return to the app's home screen. And there is efficiency and elegance in putting a receiver's or source component's menus and graphics on a second screen in the palm of your hand. Other practical advantages include built-in backlighting and unlimited recharging. Say goodbye to dark remotes and disposable batteries.

What the IR remote was to the last century, the Wi-Fi touchscreen is to this. Touchscreen controllers are not new, but until a smartphone found its way into every pocket, touchscreens were seen as exotic pads serviced by custom installers. And they cost thousands of dollars as part of an integrated home control system. Now, you can either use the same phone you carry by day to command your theater by night, or you can take a recently retired mobile device and repurpose it on the coffee table as a dedicated home theater remote or a smart-home automation controller.

In this new column, aptly dubbed "Apptitude," we'll be exploring the big, wide world of apps and their growing impact as seen through the eyes of the *Sound & Vision* reader. We'll look at A/V-centric apps like the touchscreen remote that might come with a new A/V receiver, smarthome apps, or perhaps unusual content-driven apps—the kind that might add a second-screen component to your viewing of a particular TV show, or to your enjoyment of a music album or artist. Some will be product-specific, to be used with a unique piece of hardware; others are just apps that anyone can download from the iTunes App Store or Google Play.

For now, just imagine it's 2015 and time for a movie. Upon silencing my phone, I use the same device to cue the popcorn in my IoT-certified microwave, regulate the networked thermostat, draw the connected curtain, check the feed from the cam at the front door, turn on the smart TV, start the movie stream, adjust the sound system, and, of course, dim the light.



Et Tu, Dish Network?

Networks have litigated furiously to kill the ad-skipping Auto Hop feature on Dish Network's Hopper DVR. They have repeatedly lost in court but are starting to win at the negotiating table.

Dish Network has agreed to selectively disable Auto Hop in exchange for the right to continue carrying CBS content. The negotiations got ugly for a while. When talks stalled, CBS retaliated with a 12-hour blackout of its channels. But each side came out with something it wanted.

Auto Hop will be hobbled for a week after CBS shows make their prime-time premieres. If you want to watch a show without ads, either you'll have to wait till a week after broadcast for Auto Hop to work, or manually fast-forward through the ads yourself. ABC has a similar deal with a three-day window.

But Dish traded Auto Hop for a significant concession—the right to use CBS programs in a yet-to-be-announced Internet streaming service. And Dish subscribers are getting access to the Showtime Anytime mobile app.—MF



Discounters Eyeing Home Automation

Walmart is adding a display of home automation products to its 1,700 stores. It will include 10 to 20 products, and you'll find it in the electronics department. Target is also getting in on the act, with a "smart home" section of its Website (shown) devoted to thermostats, security, lighting, and other products. A survey by Parks Associate

the Consumer Electronics Association says consumer awareness of home automation is on the low side, at 62 percent of broadband-connected households. Only 13 percent of them own at least one smart device. So either Walmart and Target are swimming against the tide—or they're tapping a huge new market for DIY home automation products.—MF



Introducing the CineGrey 5D™

The next generation 2D/3D/4K Ambient Light Rejecting front projection screen

CineGrey 5D counters the washout effect of ambient light while delivering ten times the contrast of a standard white projection screen



CineGrey 5D -
This material is intended to aid in rooms with
significant scattered light from walls and ceilings.
This as an excellent alternative.

W. Jeff Meier / AV Consultant



Ambient Light Rejecting Screen Material for
Residential & Commercial applications



Enhance 10 times the dark level contrast with
either full or partial lighting control



Supports 2D, 3D (Active or Passive), with 1080P &
4K UHD Resolution

All images above are undocrated




ELITE SCREENS
www.elitescreens.com



Reference Tracks

MIKE METTLER

Tears for Fears Take Their Rightful Seat in the Hi-Res Audio Big Chair



"Once we had dipped our toe in the water, it set us on a course to have a much bigger, much more robust, and not-so-introspective sound." Roland Orzabal is describing the veritable aural sea change he and his Tears for Fears creative partner and bandmate Curt Smith underwent while recording *Songs From the Big Chair*, the 1985 followup to 1982's *The Hurting*, their highly influential minimalist electronic-music confessional debut platform. Indeed, *Big Chair* sported a much more massive sound-field in comparison, propelling deeply layered and inherently catchy songs like "Shout," "Everybody Wants to Rule the World," "Mothers Talk," and "Head Over Heels" into international earwigs. No sophomore slump here, as *Big Chair* went on to sell over 5 million copies in the U.S. alone.

In celebration of the album's 30th anniversary, Mercury/Universal released a six-disc *Big Chair* box set that includes scores of demos, alternate takes, live sessions, and a documentary DVD, but the no-contest audioophile grail is Disc 5, a Blu-ray containing the 96-kHz/24-bit surround-sound mix of the orig-



inal album done by none other than the super-guru of 5.1 himself, Steven Wilson. "I love this mix," says Smith. "You get a far greater spectrum of sound, and the low end is definitely improved." I recently got on the horn across the Pond with Orzabal and Smith, both 53, to discuss the benefits of listening to *Big Chair* in high-resolution audio and surround. Funny how time flies.

MM: Let's get into the first track on *Big Chair*, "Shout." There's so much going on in it to begin



Courtesy of UMe

with, especially in terms of those big drums. In hi-res, you can also hear the nuances of details like the triangle you have running across the channels at the beginning and all of the other percussion, which sounds *sooooo* good. The track just gets deeper when you listen to it that way.

RO: I think it gives you a chance to see what we were doing sonically at the time. That sort of got lost in all the pomp and commercial success, the videos, and all that kind of stuff. But we were really concentrating on the sound quality. When we mixed "Shout," we had five Lexicon digital reverbs on the desk, and it took a long, long time. (*chuckles*) And it was done by committee! People would argue about the smallest things, you know?

And it just all took off from there, really. The "epic" side took over on things like "Listen," where you're really in Pink Floyd territory. I mean, how did we get from being a duo mucking around with synths to that kind of epic sound—all that sort of "dripping" Fairlight, and the crazy vocals? It was strange, really strange! (*laughs*)

CS: I think the best thing about "Shout" in 5.1 is the ability we had to separate things more. Given the two speakers left and right, you could move things behind, and especially for things like you say, where percussion no longer gets lost in the track. With surround, you get a far greater spectrum of sound, and the low end is definitely improved.

MM: Do you have a particular favorite 5.1 track on *Big Chair*?

CS: My favorite track, I think, has to be "The Working Hour." It was a striking track in stereo, and in 5.1, even more so.

RO: "The Working Hour" is my favorite, yeah. The main saxophone riff [by Mel Collins] is extremely important and powerful—it's got that sort of "crying" quality to it.

MM: When you originally got done recording *Big Chair*, did you feel it was up to the sonic standard you wanted?

CS: Oh yeah, yeah. When we started getting feedback from people we respected, our peers, we knew. I remember meeting Elton John for the first time in Europe, and he came straight up to me and said, "The first time I heard 'Shout,' I was blown away." It's those kind of things where the people you respect and admire appreciate what you do that let you know it's good.

An extended version of the Mettler-Orzabal-Smith Big Chair Q&A appears in The S&V Interview blog on soundandvision.com.

CD & DVD & BLU-RAY

LABEL: Mercury/Universal

AUDIO FORMATS: 44.1-kHz/16-bit PCM Stereo (Discs 1-4), 96-kHz/24-bit DTS-HD Master Audio 5.1 (Disc 5)

NUMBER OF TRACKS: 59 on 4 CDs, 16 on 1 Blu-ray, 19 on 1 DVD

LENGTH: 5:04:56 (4 CDs), 1:24:12 (Blu-ray), 3:10:53 (DVD)

PRODUCERS: Chris Hughes (original album), Steven Wilson (2014 stereo remasters and 5.1 remixes), Dale Griffin and Mike Engles (BBC Session)

ENGINEER: Dave Bascombe

PERFORMANCE ★★★★☆

SOUND ★★★★☆



Audio simplified for the modern home.



P S A U D I O
SPROUT

No bigger than a novel, this stylish box will change the way you listen. Play soul-soothing music from your turntable, Bluetooth device, computer, plus another analog source. Sprout only requires a pair of speakers or a set of headphones. Then, get ready to enjoy your music. So, what is it you want to hear? And how loud do you want it? Sprout is ready whenever—and wherever—you are.



New
60-DAY
Satisfaction
Guarantee

musicdirect®

800-449-8333 | MUSICDIRECT.COM

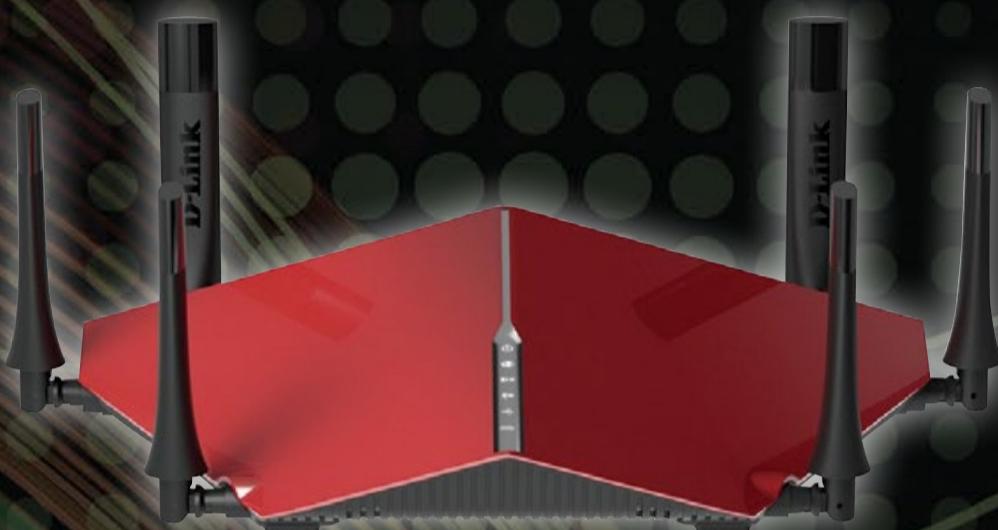
New Gear

THIS MONTH'S HOT STUFF...

→ D-Link DIR-890L/R Ultra Wi-Fi Router

No this is not a colorized, computer-enhanced photo of a suspected UFO flying near Roswell in the 1940s. The DIR-890L/R is one of four new Ultra Performance Series (IEEE 802.11ac) routers designed to support the “most bandwidth-demanding applications.” 4K streaming, anyone? Not to mention smartphones, speakers, tablets, game consoles, you-name-it, all feeding off your Wi-Fi. The DIR-890L/R has six antennas to optimize coverage and automatically switches between its three bands (one 2.4 GHz and two 5 GHz) to ensure the fastest connection for each device on the network. **Friendly as Routers Go:** A new user interface is said to make it easy to adjust parental controls, block unwanted devices (revenge, at last), set up guest networks, and otherwise control your network from a smartphone or tablet. Eat your heart out, Trekkies. **Price:** \$310

D-Link • (800) 326-1688 • us.dlink.com



← Klipsch Reference Premiere Speaker System

The fifth revision of Klipsch's 16-year-old Reference Series has a new name and a redesigned Tractrix Horn with a circular “throat” that funnels sound from a titanium tweeter into a square “mouth” to improve detail and reduce harshness (a trait of some horn designs). The lineup comprises three floorstanding models, three center speakers, two bookshelf models, and two wall-mountable surround speakers. All models (except surrounds) are available in cherry or ebony woodgrain vinyl with a durable brushed polymer veneer. Tower-based system prices (five speakers excluding subwoofer) start at \$1,900. **Surprise:** A WiSA-enabled wireless version of the system is due in the summer/fall. The tower-based system will cost about \$5,000 and include a wireless hub with four HDMI ports, coaxial and optical digital inputs, and Bluetooth streaming with apt-X.

Klipsch • (877) 412-7467 • klipsch.com





◀ Cambridge Audio Azur 851N Network Player

We'll let you decide whether the 851N is in fact "the pinnacle of digital and streaming performance," but it certainly makes a strong case for itself, offering not only 192-kHz/24-bit native playback but 192/24 upsampling for all sources. The goal? To make phones and other suspect "audio devices" sound better than you thought possible.

It's About Time: Upsampling is handled by ATF2 adaptive time filtering, which is said to improve sound quality by reducing jitter. The 851N bristles with connections, including four USB ports (one for asynchronous audio), optical and coaxial digital inputs (two each), balanced outputs, and the one we can't live without—Wi-Fi. Playback options include Spotify Connect, Apple AirPlay, Internet radio, DSD via USB, and all the common audio formats, including high-resolution FLAC and uncompressed WAV and AIFF. **Price:** \$1,999

Cambridge Audio • (800) 663-9352 • cambridgeaudio.com

◀ PSB Alpha VS21 VisionSound TV Speaker Stand

PSB may be late to the soundbar party but appears to have the bases covered with an active three-way design that doubles as a TV stand ready to support up to 88 pounds. Bluetooth apt-X streaming lets you tap into the VS21's 100 watts of power and dual tweeter/midrange/woofer speaker setup when you get the urge to stream Celine Dion from your phone (just make sure no one's around). Want more bass than the 4-inch woofers can deliver? No sweat—there's a subwoofer output alongside the optical, coaxial, and analog inputs. **NRC-Approved:** A Dialogue setting developed at Canada's renowned National Research Council enhances vocal clarity by separating voices from background sounds, while an onboard Dolby Digital decoder and WideSound processing deliver "three-dimensional sound." **Price:** \$599

PSB Speakers • (905) 831-6555 • psbspeakers.com



◀ Sony XBR-75X940C 75-Inch Ultra HDTV

Even though a record number of UHD TVs will hit store shelves this year, we still have a ways to go before 4K content is ubiquitous, which is why upconversion is so important in UHD TVs. Sony says the triple-threat of its new 4K processor, X-tended Dynamic Range Pro technology, and X-Reality Pro upscaling algorithm enhances the color, contrast, and clarity of all incoming sources and improves 4K streaming quality. The XBR-75X940C supports Google's Android TV platform for simplified streaming and phone-to-big-screen "casting." A serious (for a TV) sound system is also on board. **Big Screen, Big Potential:** Of greater note to video-philes, the TV is ready for the impressive pinpoint brightness of high dynamic range (HDR)-encoded content, which is expected to start trickling into the market later this year. Pricing was unavailable at press time.

Sony • (877) 865-7669 • sony.com



Four Steps to Hi-Res Heaven

• Meridian Explorer²

What you need to know—and do—to start enjoying your music in better-than-CD quality. By Al Griffin



The difference between regular and high-definition video is something that most folks will immediately recognize when they see it. But what about high-resolution audio? Unlike HDTV, which caught on fairly quickly and enjoyed a broad base of support from program providers and hardware manufacturers, hi-res audio or HRA, (now an industry-sanctioned term) has struggled to move out of its audiophile niche since downloadable content first came online back in 2008.

That may be changing, thanks in part to some unusual media attention. Most music fans are familiar with Neil Young and his extensive music catalogue. But many didn't know until recently that Young has been a vocal opponent of the CD, which he has long derided as a low-resolution format that sucks the "life" out of studio master recordings. As for compressed audio formats like MP3 and AAC, forget it; in Young's estimation, they don't even rate.

But, rather than simply gripe about the situation, Young took decisive action to, in his words, "rescue the art form that I've been practicing for the past 50 years." The result is

Pono, an end-to-end solution for delivering hi-res audio to like-minded music enthusiasts who crave better-than-CD-quality playback. But while Pono has been the most high-profile of all the HRA developments, it's actually just the latest addition to an expanding ecosystem of HRA music services, software applications, and hardware.

We previewed Pono in detail in our September 2014 issue (also available at soundandvision.com), and you can get an update on it here in the sidebar on page 39. But let's first define HRA and dive into the details of how it can deliver sound that's better than what we're used to hearing on CDs, not to mention via compressed downloads and streaming services.

I Wanna Get High, So High

As with HDTV, which bumps up the number of pixels used to display video images from around 300,000 to just over 2 million, the benefits of

hi-res audio are easy to appreciate when you check the specs on paper. The CD format samples audio files at a 44.1-kilohertz rate (44,100 times a second) with 16-bit encoding. With digital audio, that first number, the sampling rate, is critical because it defines how frequently the recording system looks at the original analog signal coming from the microphone(s) or analog master tape. Having more samples means less time between them, so there's less guesswork to fill in the gaps later when the signal is reconstructed for playback on your speakers or headphones. The second number is the signal's bit depth; it defines how

many possible codes are available to describe the signal's amplitude (i.e., loudness) for any particular sample. Every additional bit adds exponentially more options, which yields a reconstructed signal with finer resolution and less rounding error.

What makes hi-res audio different is that



hi-res systems sample the original analog signal at a much higher frequency than CD—usually either 96 or 192 kHz—and typically with 24-bit encoding. DSD, another high-resolution format used for downloads from a few online services, taps the same technology employed for SACD, a format that, along with DVD-Audio, made a failed attempt for major-label and public acceptance back in the early 2000s. DSD uses only a 1-bit sample size, but collects samples at either 2.8 or 5.6 megahertz—that is, 2.8 or 5.6 million times per second.

In 2014, the Consumer Electronics Association partnered with major labels to come up with a formal specification for hi-res, one that would differentiate it from CD-quality audio. It is now defined as “lossless audio that is capable of reproducing the full range of sound from recordings that have been mastered from better-than-CD-quality music sources.” (“Lossless” meaning that the final source as played back is equivalent to an uncompressed signal.) The CEA breaks down those sources into four categories of “Master Quality Recordings”:

- MQ-P: from a PCM master source that is 48-kHz/20-bit or higher (typically 96/24 or 192/24 content)
- MQ-A: from an analog master source
- MQ-C: from a CD master source (44.1-kHz/16-bit content) in which legacy CD masters are employed as source material and resampled at a higher rate and bit depth. (A controversial approach, to be sure.)
- MQ-D: from a DSD/DSF master source (typically, 2.8- or 5.6-MHz, 1-bit content)

To help push mainstream adoption of HRA, the CEA is also making available a hi-res audio logo (see previous page) that can be applied to products spec'd to deliver HRA experiences, according to the CEA definition. This should make it easier for someone who's curious about HRA but confused by the technical details to select the right gear when shopping. And there has been an explosion in HRA-capable products over the past few years—everything from pricey portable players and standalone digital-to-analog converters (DACs) to low-cost A/V receivers. We'll look closer at those categories in just a bit.

Step 1: Start a Hi-Res Library

While some high-resolution content is available on shiny disc via Blu-ray and the aforementioned SACD and DVD-Audio formats (still alive), the bulk of it is available for download

to your computer hard drive from a range of online music stores. But before you can start building your hi-res library, you'll have to install some appropriate library and player software. For most people who download and rip music, iTunes is their default digital music software. While iTunes can play HRA files, it has a serious limitation: To play files at resolutions higher than 44.1/16, you first need to launch your computer's audio control panel and switch the settings to match the source format's native resolution. When you have a mixed-format music library, including files at 192/24, 88.1/24, 96/24, etc., not to mention CD-quality 44.1/16 or compressed MP3s, having to hit the control panel each time you play a specific track can get old fast.

To get around this, you'll find a number of media players available that run alongside or on top of iTunes and automatically switch audio settings depending on the track being played. Aside from freeing you from having to repeatedly open up your computer's audio control panel, these let you use the standard iTunes library interface that most of us are used to. Popular software options in this category include Audirvana+ (\$49), Amarra Hifi (\$35), Pure Music 2 (\$129), and BitPerfect (\$10).

In addition to programs designed to piggyback on iTunes, there are standalone media player applications with their own library and playlist GUI that can handle HRA files. Popular options for the Windows platform today include JRiver MediaCenter (\$50), Foobar2000 (free), MediaMonkey (free), and Signalyst (\$147). JRiver and Signalyst are also available on the OS X side for Mac users. Most of these programs allow you to play DSD files in addition to those encoded as lossless FLAC files and straight PCM-format ones. JRiver has the added benefit of video playback and also works as a DLNA server for streaming your media to DLNA-compliant devices over your home network.

And speaking of file types like FLAC and the others: Don't assume a file's label necessarily makes it hi-res. As described above, hi-res audio



● Popular hi-res media players include JRiver (top) and Foobar 2000.

is defined by the sampling rate and bit depth of the digital file and the quality of the originating master. These have nothing to do with the type of compression algorithm used to package the file for transport and storage. Hi-res will always be packaged lossless or uncompressed, however, with some common file types being WAV, AIFF, and DSD (uncompressed) and FLAC, ALAC, or WMA Lossless (lossless). You'll want your media software to be compatible with the common file types you plan to acquire, as well as those existing lower-res MP3s or AAC files you may want to bring along for the ride.

● HRT microStreamer USB DAC



● Sony UDA-1 amplifier/USB DAC



● **AudioQuest DragonFly portable USB DAC**



FOUR STEPS TO HI-RES HEAVEN



● PSB Alpha PS1 desktop speaker system

Step 2: Get a USB DAC

Once you've got things straightened out on the software player side, it's time to check out HRA-capable hardware. The main item you'll want that you probably don't already have is a separate USB DAC. There are plenty of options here to consider, ranging from highly affordable (\$100 and under) to pricey (thousands of dollars). USB DACs also come with a range of features. Many provide an internal headphone amp for private listening, along with the ability to connect your source computer to an external audio system. Some also function as an integrated amp, typically with sufficient power to drive a decent set of desktop or bookshelf speakers. (See our review of two such units on page 41.)

No matter which USB DAC you decide on, the key feature you'll want is asynchronous transfer mode. This allows the DAC to bypass the computer's internal timing and take control of the clock rate at which data is converted to audio—an important factor for eliminating timing errors that degrade sound quality. Being able to sidestep the inconsistent timing



mandated by a usually busy computer—a device that continually performs loads of other processing functions aside from audio digital-to-analog conversion—is the key reason you'd consider using an

external USB DAC in the first place, as opposed to the DAC already present in your computer or even those typically found today in most A/V receivers.

The most affordable—and portable—hardware option for diving into HRA is a USB stick-style DAC. It either plugs directly into a USB port on your computer (like a standard USB thumb drive) or connects via a USB cable. A few examples in this category include the AudioQuest DragonFly (\$149), Meridian Explorer² (\$299), Audioengine D3 (\$149), Cambridge Audio DacMagic XS (\$189), HRT microStreamer (\$199), and Sony PHA-1A (\$300). The AudioQuest, Audioengine, and HRT models handle files up to 96/24; the Cambridge Audio and Meridian handle up to 192/24. Each DAC also contains a headphone amp. You'll find our reviews for some of these at soundandvision.com.

Beyond the ultra-small stick DACs are a number of DAC/headphone amps that can work on the go or on a desktop or rack at home; many are compact enough to be tossed in a suitcase, but may not offer quite the same portability as the models listed above. Some are battery-operated or powered by their USB connections, while others have a wall-fed power supply. Options include the Audioengine D1 (\$169), iFi nano iDSD (\$189), Micromega MyDac (\$369), Cambridge Audio DacMagic 100 (\$299), and Sony PHA-2 (\$600). All units with the exception of the Audioengine handle files up to 192/24; the iFi and Sony can also process DSD. Additionally, there's the Sony UDA-1 (\$799), a desktop integrated amp/DAC that offers a built-in 20-watt x 2 amplifier and output connections for desktop speakers.

High-end standalone USB DACs are another option—one that's popular with audiophiles who have a swanky dedicated listening room and don't mind lugging their laptop around to use as a source. These DACs tend to be pricey, and some omit convenience features aimed at desktop audiophiles, such as a headphone amp.

There are also a small number of better A/V receivers that feature a built-in DAC with an asynchronous USB input for direct

connection to a computer, making them a good option for combining HRA with your home theater. Two examples are the Cambridge Audio Azur 751R (\$2,700) and Pioneer Elite SC-89 (\$3,000).

Step 3: Make Everything Else Hi-Res

Investing money in new media player software and a USB DAC doesn't make sense if the rest of the gear you'll use for HRA listening isn't up to snuff. The benefits you get with good hi-res recordings include wide dynamics, crisp detail, and a sense of spaciousness and depth that you

just don't get when listening to compressed streams or badly mastered CDs. But you'll need to use speakers, amps, and headphones of high enough quality to hear those benefits; the cheap desktop speakers that came with your computer or inexpensive earbuds are out of the question.

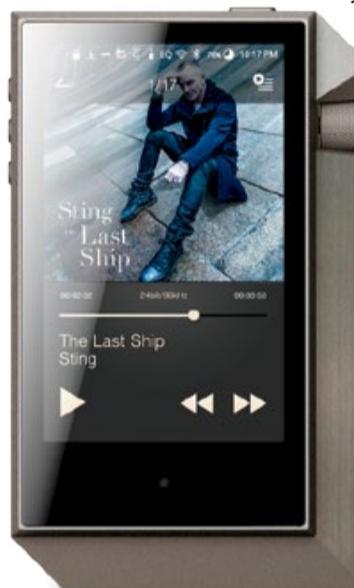
Fortunately, in a home theater environment, the same type of gear you depend on to deliver a good movie or music experience should also suffice for HRA. And unlike with other new developments such as Dolby Atmos, you won't need to upgrade your speakers or receiver. Just make sure the

system has a good subwoofer for to enjoy the extended bass you get with the best hi-res files, as well as amps powerful enough to let your speakers play loud passages with ease.

For tabletop or desktop use, you'll definitely benefit by investing in a high-quality desktop speaker system. Recent models that we've selected as Top Picks include the Audioengine 2+, PSB Alpha PS1, and Definitive Technology Incline (see reviews at soundandvision.com). Each of these options is available for under \$500. And with the PSB, you'll still be in that price range even after adding the company's potent SubSeries 100 compact subwoofer.

Headphones are a good match for HRA audio listening; the intimate listening environment created through 'phones lends itself to picking up the added nuance of hi-res files. High-quality options from traditional headphone makers, along with newcomers and speaker manufacturers looking to get in on the game, have exploded in recent years. They can be pricey, but our Top Picks list includes a range of outstanding models available for under \$400 (B&W P7, NAD Viso HP50) and a few that sell for under \$200 (V-Moda XS, Audio-Technica ATH-M50).

With a good pair of headphones in your arsenal, you may also want to consider an HRA-capable portable player for listening to hi-res tunes on the move. With the demise of the iPod classic (R.I.P.), such players have become the go-to option for those who want a simple, pocket-sized device devoted to high-quality music playback.



● Astell & Kern AK240



● B&W's P7 headphones

HRA-capable players are available now from companies including HiFiMan, FiiO, Astell & Kern, Pono, and Sony, which resurrected its Walkman concept in order to champion the cause of HRA. Prices range from \$300 (Sony and FiiO entry models) to \$2,500 (Astell & Kern's AK 240). The main features you gain as you step up in price include things like DSD compatibility, Wi-Fi connectivity, and an OLED display, as well as machined metal control knobs that can adjust volume in fine increments.

Step 4: Grab Some Tunes

Step 4 on your hi-res journey is the most fun: Start collecting music. Granted, the number of online stores that sell hi-res music is still somewhat limited, as is the total breadth of content offered. But the online catalog is growing rapidly these days, with plenty of selections in a wide range of music genres.

The granddaddy of HRA music download sites is HDtracks.com. This destination boasts an extensive collection of classical, jazz, rock, and world music in 24-bit FLAC, ALAC, WAV, and AIFF formats, much of it available in 88-, 96-, 176-, and 192-kHz sample rates. Miles Davis, Black Sabbath, Richard Wagner, Led Zeppelin, even pop stuff like Lady Gaga—it's all there in hi-res.

Another go-to site for HRA downloads is Acoustic Sounds' Super HiRez store. While the selection here isn't yet as extensive as what you'll find at HDtracks, the site boasts plenty of titles available in the DSD format that many audiophiles prefer, including plenty of great classics such as Dave Brubeck's *Time Out*, Steely Dan's *Gaucho*, Michael Jackson's *Thriller*, and many others. (Acoustic Sounds also sells LPs, SACDs, and hi-res gear, as does Music Direct, another site with disc and hardware options. Audio Advisor is popular for equipment.)

Additional online music sites that sell HRA downloads include the Pono Music Store (see sidebar), Onkyo Music, ProStudioMasters, the Bowers & Wilkins Society of Sound, iTrax, and others. You'll also find smaller audiophile record labels that support sales and sometimes free hi-res downloads of their own titles, among them Blue Coast Records and the Nordic label 2L. Search for "hi-res audio downloads" and start poking around; you might find a few gems.

As for streaming hi-res, the Tidal music service, which at this writing offers lossless CD-quality streams (along



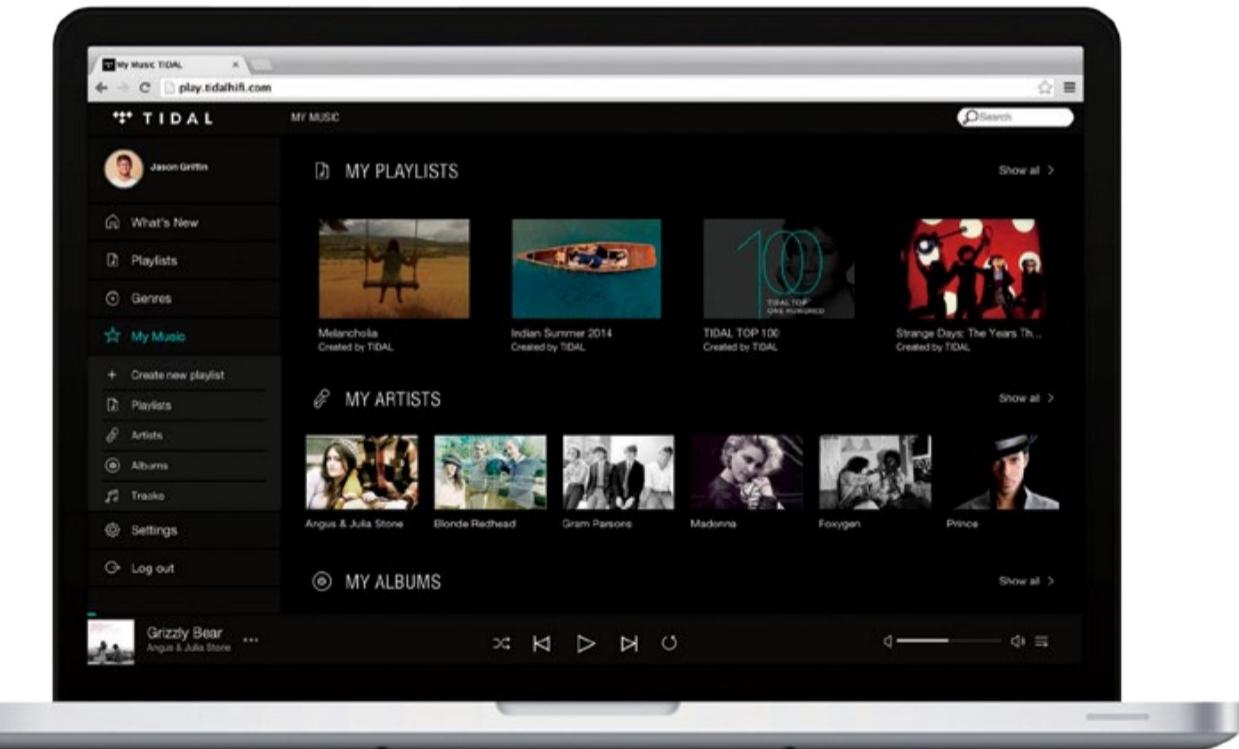
● Super HiRez and HDtracks are among today's popular sites for hi-res downloads.

with Deezer; currently available only through Sonos systems), will soon make content available in hi-res. The company plans to bring its extensive catalog to the streaming realm via Meridian's MQA (Master Quality Authenticated), a new compression technology that enables bandwidth-hogging HRA files to be efficiently packed for real-time transfer over the Internet. (See "Streamers Say Yes to MQA," page 25. And Note that Meridian MQA is unrelated to the CEA's MQ-A designation.) HRA streaming promises to provide a more affordable alternative to pricey downloads that run \$18 to \$25 per album.

Flying "Hi"

Now that you've got your HRA software, hardware, and music in order, it's time to luxuriate in all that high-resolution goodness. Compared with the sound of most CDs, the careful listener will find much to appreciate in the meticulously mastered titles that are characteristic of the best HRA digital files, and hi-res offers an enormous technical and sonic advantage over everyday downloads from the likes of iTunes and Amazon. If you truly care about engaging with your music, you really owe it to yourself to check out what hi-res audio has to offer. ♦

● Tidal will soon offer hi-res streaming.



Pono Update

Neil Young's Pono has come a long way since we previewed it last fall. The key thing: It launched. Originally scheduled to roll out in October 2014, Pono finally debuted in early January 2015, shipping pre-ordered players to its Kickstarter supporters and opening its

music store the same day. The milestone was heralded by Young at a press conference during this year's Consumer Electronics Show. Curious listeners can now buy their own Toblerone-shaped Pono player for \$399. The Pono player will also reportedly add DSD playback via a forthcoming software update. At present, the player supports the FLAC, ALAC, WAV, and AIFF formats.—AG



SVS PRIME SERIES **THE NEXT GENERATION OF SPEAKERS IS HERE.**

Audiophile precision, cinematic dynamics, unprecedented value.

Learn more at svsound.com

"...have a surprisingly big sound... flawless in its performance... get an audiophile grade home theater system at a fraction of the cost."

*Chris Murray
AV Tech Reviews*

"Potent combination of very low sonic coloration, impressive dynamics, and bass performance... it's one of the best buys going!"

*Brent Butterworth
HomeTheaterReview.com*

"SVS's Prime Satellite 5.1 system is as good as it gets for \$1,000... a genuine achievement."

*Daniel Kumin
Sound & Vision*

"I had to watch it again and again to make sure I wasn't just fooling myself. It really is that good... Solid performance, striking design, exceptional build quality and all at a price point that is remarkable for what you get."

*Sam Posten
Home Theater Forum*



These compact, versatile, and affordable combos will drive good bookshelf speakers or headphones to audiophile heights, each with its own sense of style.

By Daniel Kumin

The New Wave

PS Audio Sprout and Teac AI-301DA Integrated AmpDacs

PRICE

PS AUDIO: \$799/TEAC: \$549



IT'S CERTAINLY A

thing. It may be a trend. Or possibly even a wave—a new-wave, high-res groundswell sweeping over the nation's small but growing (we hope!) cadre of youthful audio fans.

I'm talking about ultra-compact integrated-amplifier/digital-to-analog converters: "ampDacs," I'm calling them. The newly evolved species combines a two-channel integrated amplifier (usually of modest power), a headphone output (usually), and high-resolution audio digital-to-analog conversion, all engineered to meet audiophile expectations of quality, and all packaged into a single, paperback-sized unit conceived for versatility. (Most

models, including the two under review here, add today's ubiquitous Bluetooth wireless capability.)

Desktop audio, dorm-room sound system, home-studio reference playback, secondary-room music system: All are target-market segments for the ampDAC. You can already find examples on the shelves, ranging from truly popular-priced models under a couple of bills to multi-thousand-dollar ones that will make your head swim. But either way, nearly all will have designs, features, and marketing that clearly nod at the coming-up generation of younger music lovers. Ever seeking the happy medium in cost, S&V rounded up two freshly debuted ampDacs from among the more rationally priced.

PS Audio is a small Colorado outfit with a 40-year portfolio of audiophile designs, mostly encompassing pre- and power amps and DACs. Their new ampDAC, whimsically dubbed Sprout and priced well below usual PS Audio territory, is manufactured in China rather than Boulder, from whence most full-sized PS components spring. What's more, the Sprout's creation was crowd-funded via Kickstarter, and you can't get much more next-gen trendy than that.

Teac may be unfamiliar to more recently minted *audio-istas*, but the name—or that of Tascam, Teac's pro-audio brand—should be an old friend to anyone involved in music or recording since the 1970s, when Teac was a leader in open-reel analog-tape recorders, and then cassette units. The AI-301DA is one of a quite broad range of hi-res-audio-ready components in the firm's new lineup

of 21st-century midsize gear. (For more about hi-res audio, or HRA, see our feature on page 36.)

Compare and Contrast

These new ampDacs from PS Audio and Teac have much in common, and a few differences, too. Both incorporate two-channel power, 192-kilohertz/24-bit-friendly asynchronous USB DACs, and 0.25-inch headphone outputs, and they feature only very basic control sets: power on/off, volume, and input select. Both also have Bluetooth with the higher-sound-quality aptX codec, and they squeeze in nicer-grade multi-way-post speaker outputs instead of cheapos or (shudder!) spring terminals.

Differences: PS Audio's Sprout features a phonograph input (feeding a high-quality onboard phono preamp) but only a single analog-stereo line in, plus an analog preout, both on 1/8-inch stereo jacks. Teac's AI-301DA offers two line-ins on dual RCA jacks but no line/preamp outputs, and no turntable input—you'd need a separate phono preamp for that. It does sport an RCA sub output, however, making it ready for a 2.1-channel setup. (Adding a sub to the Sprout calls for tapping the analog preout.)



INTEGRATED AMPLIFIER AI-301DA

TEST REPORT

PS AUDIO SPROUT AMPLIFIER/DAC

PRICE: \$799

PS Audio • (720) 406-8946 • psaudio.com

RATING

PS Audio Sprout Hi-Res Amp/DAC

Performance ★★★★☆

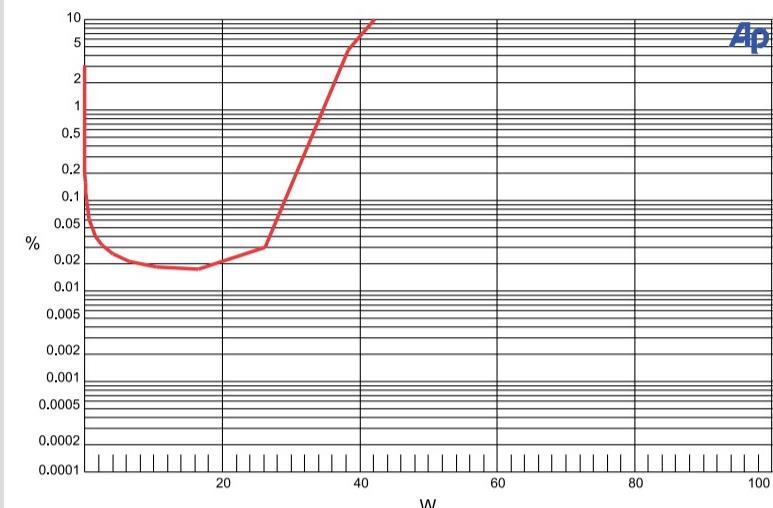
Features ★★★★☆

Value ★★★★☆



Test Bench

PS Audio Sprout Hi-Res AmpDAC



THIS graph shows the Sprout's left amplifier channel, with two channels driving 8-ohm loads. Measurements for THD+noise, crosstalk, and signal-to-noise ratio were within expected performance parameters, though analog/digital frequency response exhibited an undefeatable 7 dB boost at 70 Hz (verified as intentional). Full details available at soundandvision.com.—MJP

	0.1% THD	1.0% THD
2 Channels Continuously Driven, 8 Ohm Loads	29.1 watts	34.7 watts
2 Channels Continuously Driven, 4 Ohm Loads	52.8 watts	58.8 watts

SPECS

Dimensions (WxHxD, Inches): 6 x 1.75 x 8 • **Weight (Pounds):** 2.9 • **Output Power:** 32 watts/channel (8 ohms, both channels driven, no distortion specified) • **Audio Outputs:** Stereo speaker; 1/8-in stereo line-level, 1/4-in headphone • **Audio Inputs:** Digital: USB "B" (asynch.), coaxial S/PDIF; analog: 1/8-in stereo, phono-MM (dual-RCA) • **Other:** Bluetooth wireless receiver; aptX compatible • **Controls:** Rotary volume, source-select; power switch (rear) • **DAC:** PCM up to 192 kHz/24 bit

The Teac includes three selectable wired digital inputs (coax, optical, and USB), while the PS Audio's coaxial-digital and USB inputs are fixed to the same path; USB automatically takes precedence should both become simultaneously "live."

Geekier Still

I played DSD music files through both ampDacs, but each unit handled them differently. Technically speaking, the Teac's Burr-Brown PCM1795 DAC can directly decode a DSD signal; the Sprout's Wolfson WM8524 chip only does PCM. However, the USB output of today's

Macintosh computers supports just one audio format, which is PCM. For

AT A GLANCE

Plus

- Phono input
- Line input and output
- Warm, engaging sound

Minus

- No remote control
- No direct DSD decoding

nothing I could remotely ascribe to the Sprout's "non-native" DSD playback among the files I tried.

Even more geek: Both designs employ Class D power amplifier blocks (often erroneously labeled "digital amplifiers"). Teac lists theirs as coming from Danish B&O spinoff ICEpower; PS Audio doesn't call theirs out, but a little poking around inside revealed it to be from a smaller Swedish competitor, Anaview. The specs for both modules are similar: 35-ish watts per channel into 8 ohms, with a bit more into 4 ohms. (See our Test Bench results.) I'm not going to rehash the whole Class D versus Class A/B debate here, except to state that I don't buy into any amplifier topology being somehow inherently superior; that I've heard plenty of fabulous Class D designs of various sizes; and that the size of these ampDacs virtually dictates Class D's efficiency and compactness.

Last and probably more significant for many, the Teac features a handset remote control, while the PS Audio operates only via fingers to front panel. The Sprout's designer pointedly states that this was a conscious choice, mandating a more intimate, hands-on, old-school listening experience.

Setup

In my hands, both units felt satisfyingly well made. Each has a certain lapidary quality, with the brushed-aluminum panels and inset Allen-head fasteners that are *de rigueur* to current high-end industrial design, as well as rotary controls that are luxurious to the



PS Audio's Sprout wears a real wood veneer top panel.





The Sprout offers a direct phono input for turntable.

touch. The Teac's ribbed aluminum top panel looked classy to me, the PS Audio's real wood walnut veneer top more unusual. Both are deluxe-feeling designs, and I wouldn't consider myself cheated were I to purchase either. But the sound is the thing here, which opens the high-resolution source question.

You can, of course, play two-channel SACDs (or even plain CDs) via either component's S/PDIF digital inputs, and obtain very fine results. I did, and did. But the full-monty test will be hi-res files incoming to the ampDACs' asynchronous USB ports, which addresses the vexing question of digital-data timing and synchronicity by exercising command and control over data delivery from the source. Here, there's an ever-increasing list of options to play back these files, including portables/handhelds, music-server/streamer components, and even multiroom wireless systems, but I used what I suspect

most folks still do: a computer.

In this case, I connected one of my older iMac's USB ports directly to the Teac and PS Audio in turn, via a 16-foot USB cable (from Staples, in case anybody cares—and I'm sure somebody will). Each ampDAC drove my usual monitors, old-but-excellent Energy Veritas three-ways, full-range, via 8-foot lengths of specialty 10-gauge speaker wire. The Energys make quite a stout test of amplifier abilities, since they are both a fairly complex load and less than usually sensitive. (Wonk note—probably not the last: While both ampDACs worked perfectly from my Mac, Windows users will need to download and install a driver for the USB connection; both PS Audio and Teac provide links and instructions for this simple but totally unnecessary-in-the-Mac-world detour.) I employed a variety of software-file players, including Korg's AudioGate, interesting newbie Vox, and Teac's own freeware HR Audio Player.

Performance

In the reverse of "burying the lede," I'm going to begin with conclusions, right here at the top of the "Performance" section. Do these two ampDACs sound "different"? Yes, maybe, and no.

At the end of the day—month, actually, that I spent with these units—the PS Audio Sprout got the nod for "warmth" and "organics" of things like string-tone and bass-guitar "fatness," but it seemed marginally less powerful than the Teac AI-301DA, at least into my speakers. I sensed the PS Audio didn't play *quite* as loudly/cleanly as the Teac, but the difference was very slight, and the Sprout's behavior at the limit was nicely controlled. As for its "warmth," I would only learn later, after my evaluation was complete and draft review copy submitted, and after our usual subsequent bench tests, that the Sprout was designed to deliver what we measured to be a 7-decibel boost centered around 70 hertz. This is not the result of leaving on a defeatable setting, but EQ built

into the spec. A PS Audio spokesperson said "this was a 'real-world' decision based upon Sprout's largely non-audiophile audience," with the intent of providing "a touch more impact to the small, relatively inexpensive speakers and mid-line 'phones" that the company perceives the product will be mostly mated with. He went on to say that with wide-range, high-grade speakers, the boost is "primarily heard as a little more ambience or presence, not as muddiness or bloat."

I wouldn't say I heard either the former or latter through my Energy monitors, though this may help to explain that subtle warmth I did hear with some tracks and report on below. Nonetheless, upon seeing the Sprout's test bench results, I was a bit surprised, but reminded (again) of the truism that tonal balance (frequency response) is indeed a balance, such that, depending on its magnitude, frequency, and "Q," a change in measured response in the bass may be perceived as "smoother" or "warmer" treble, or vice versa.

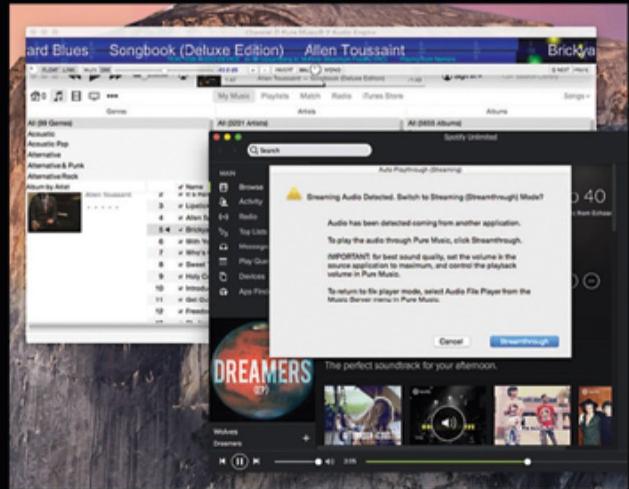
CUTTING EDGE COMPUTER AUDIO

See us at AXPONA 2015
including Vinyl Ripping Seminar

• PURE MUSIC® V2

Enhances and Complements Apple's iTunes with:

- Native DSD File Playback (via DoP or Automatic PCM Conversion)
- Automatic Sample Rate Switching up to 384 kHz and 5.6 MHz DSD
- 64 Bit Upsampling and Dithered Volume Control
- Signal Level Metering, Dynamic Range Meter
- Streamthrough for Internet Audio Sources
- Exchange Channels, Balance Control, Invert Polarity, Mono
- Supports Audio Plug-ins for Room Correction / EQ, etc.
- Adjustable Multi-Way Electronic Crossover
- Stream Audio up to 384 kHz to other Macs on local network
- Mac OS X 10.5 through Mac OS X 10.10
- Free Customer Support (phone, email, Remote Support)
- Docks with iTunes - supports Apple iOS Remote App



Streamthrough Internet Audio
use Pure Music plug-ins, EQ, crossover, metering, etc.

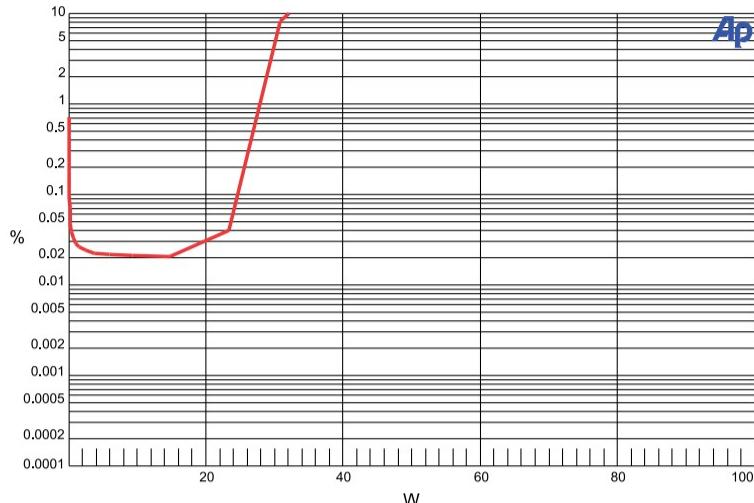
• PURE VINYL™ V4

- High Resolution Vinyl Ripping / Editing
- Linking LPs with High Resolution (192/24) Digital



Test Bench

Teac AI-301DA Hi-Res AmpDac



THIS graph shows the AI-301DA's left amplifier channel, with two channels driving 8-ohm loads. Measurements for THD+noise, crosstalk, signal-to-noise ratio, and analog/digital frequency response were all within expected performance parameters. Full details available at soundandvision.com.—MJP

	0.1% THD	1.0% THD
2 Channels Continuously Driven, 8 Ohm Loads	24.6 watts	27.8 watts
2 Channels Continuously Driven, 4 Ohm Loads	37.5 watts	50.2 watts

SPECS

Dimensions (WxHxD, Inches): 8.4 x 2.4 x 10 • **Weight (Pounds):** 4.5 • **Output Power:** 30 watts/channel (8 ohms, no distortion specified) • **Audio Outputs:** Stereo speaker; RCA subwoofer, 1/4-in headphone • **Audio Inputs:** Digital: USB "B" (asynch.), coaxial & optical S/PDIF; 2x line-stereo (RCA) • **Other:** Bluetooth wireless receiver; aptX compatible • **Controls:** Rotary volume, sequential-pushbutton source-select; power switch (front), power indicator (signal-sensing auto-power on/off) • **DAC:** PCM up to 192 kHz/24 bit, DSD at 2.8 or 5.6 mHz

Speaker designers exploit this understanding knowingly; most electronics designers do not, as our expectations of ruler-flat response and parts-per-million distortion are all but institutionalized.

I began my listening with a movement of Bartók's *Divertimento* for strings from a Channel Classics DSD download—a fairly bright, almost edgy recording to begin with—that sounded, at moderate listening levels, more inviting via the

- The Teac's remote offers basic control.



Sprout than the AI-301DA. Another Channel Classics download, of a transient-rich guitar-and-percussion arrangement of Falla's *El Amor Brujo*, showed both components in a very favorable light. In both cases, the spacious, resonantly three-dimensional sonic image spread well beyond, behind, and even around the two speakers, as graphic a demonstration of high-end soundstaging as one could want. But I noted that the Teac maintained convincing transient snap even at front-row-center levels, while the PS Audio had to be content with a few rows less to avoid edging into incipient hardness.

Or so I felt, at least. To be fair, the necessary interval of several minutes to switch cables and software playback-device settings between each component swap, not to mention the notoriety of auditory memory, made comparison if not actually odorous (as Shakespeare's Dogberry tells us), then dubious at best.

My preference for DSD source files, though slight, is pretty well established. I find that, on the whole, they sound subjectively better than the mass of high-resolution PCM music—though whether this is real or mere confirmation bias, I cannot say, nor can I easily point to the format or simply the care taken in the process by the mostly smaller audiophile labels that make DSD recordings.

The dearth of non-classical/jazz/audio-phile hi-res audio program material doesn't trouble me too much, since my serious listening is overwhelmingly classical—though this might change if there were alternatives. Even where an option exists, like Stevie Ray Vaughan and Double Trouble's classic *Couldn't Stand the Weather* in a 176/24 upconversion from HDtracks, the quality rarely challenges even a pedestrian HRA classical (or jazz) offering. Still, some improvements sound convincingly real: There was enough newly uncovered dynamic detail and high-frequency sweetness on the still-amazing "Scuttle Buttin'" to make the journey worth the fare. I heard pick-attack definition and cymbal air that were altogether new—and I heard them just about equally on both the Sprout and the AI-301DA.

Other than the Teac's already mentioned ultimate-volume advantage—probably not more than a decibel or two with my speakers, if real at all—I heard little else to choose between 'em. On another DSD download, this time a folkie/world track, "Silver Pen," from one David Elias (via Linn Records), there's an opening of low notes from a harp (or possibly bajo sexto); these impressed me as marginally richer, or perhaps "weightier," on the PS Audio. Then again, a denser track like the New Orleans-feel "Jolie Jolie" by



- The Teac AI-301DA is housed in an elegant brushed-aluminum case.

RATING**Teac AI-301DA Hi-Res Amp/DAC**

Performance

Features

Value

HI-RES AMP/DACS**TEAC AI-301DA AMPLIFIER/DAC****PRICE:** \$549Teac • audio.teac.com

Rickie Lee Jones (an HDtracks 192/24 FLAC) tilted me back toward the Teac, for easy transparency and perhaps clearer soundstage depth.

Sometimes I was tempted to characterize the PS Audio as marginally “warmer” and the Teac as just as marginally “transparent-er,” but far more often, I was utterly stumped. I could go back and forth like this all day; suffice it to say that both ampDacs have the goods to display higher-resolution recordings, regardless of format, to advantage.

As headphone amps, both units performed similarly on two sets of cans at my disposal: my everyday Sony MDR-V6 and the Sennheiser HD-25II (both are middle-impedance ‘phones, around 75 ohms). I went back and forth repeatedly and reached no lasting conclusion. If you put a gun to my head (but please don’t), I think I’d take the PS Audio’s headphone circuit, which seemed to have a few decibels more output, at least into my ‘phones. I happened upon a few online mentions of residual buzz on the Sprout’s

headphone output, but this afflicted only a handful of units shipped before PS Audio made a fix; I heard no such noise from my sample.

In any event, I would definitely take the PS Audio’s phono preamp, a decided winner over the Teac’s absent one. I spun a few platters and was quite pleased by open, nicely extended playback.

The Bluetooth discovery pages of both my iPhone 5s and my iPad Mini found the Sprout and the AI-301DA almost immediately, and everything worked fine wirelessly, sounding about as good as I expect A2DP Bluetooth to do—which is, um, pretty good. (I do not currently have a source incorporating the better-sounding aptX codec.) Either way, if Bluetooth is all you need, there are far cheaper solutions. But having it here presents a nice option for pushing music from a handheld, yet another decided nod to modern lifestyle.

The Teac’s sub output is simply a summed mono signal, with no filtering. If you use it, you’ll want a suitable low-pass filter active on your

AT A GLANCE**Plus**

- Six source inputs
- Dedicated sub output
- Remote control
- Dynamic and transparent

Minus

- No stereo line out

176/24 files from its coax S/PDIF input, a restriction of its chipset.)

The AI-301AD’s half-sized wand remote controller proved generously laid out and perfectly usable, and it includes transport buttons for Teac’s companion streamer/player components. The Sprout’s ergonomics are even more Spartan: two knobs and a back-panel power switch. There’s no power indicator, which I occasionally found unsettling, but in real life, I suppose I would simply leave the unit on, as I suspect most others would.

The Bottom Line

The value equation is no easier between these two. Teac’s AI-301AD provides remote control, more digital inputs, and a lower price, while PS Audio’s Sprout offers more analog I/O, plus a phono input—and quite a nice-sounding one at that. In my view, shoppers could simply choose the one whose features best meet their needs, or whose ethos answers their aspirations, and not put a foot far wrong. ♦

INNOVATION, PERFORMANCE, & VALUE

INTRODUCING THE NEW VTF-3 MK5 HP & VTF-15H MK2



With our new models,
we push performance
and value to new heights

PERFORMANCE
FEATURES
BUILD QUALITY
VALUE

"I am giving both subs a Top Pick for their Performance..."
David Vaughn,
Sound & Vision.com,
Feb/March 2015

VTF-3 MK5 HP

PERFORMANCE
FEATURES
BUILD QUALITY
VALUE

"the only sub on our list that netted five stars across the board"

Bob Ankosko,
Sound & Vision.com,
Dec 2014

VTF-15H MK2

A Bright Idea

By Al Griffin

Sony VPL-VW350ES 4K SXRD Projector

PRICE \$10,000

WHEN I HEAR SOMEONE question the value of 4K, the first thought that comes to my mind is: projection. Unless your nose is pressed up to the screen, a 4K image viewed on 50-inch flat-panel TV won't look much different from regular old 1080p. A main advantage to 4K is that you can scale your display up to a massive size without having to worry about seeing the individual pixels that form a picture. And when you're thinking about scaling a video display up to a massive size, nothing gives you a better return on investment than projection.

Sony has led the charge in releasing native 4K projectors for home use, and at \$10,000, its new VPL-VW350ES is the company's lowest-priced offering yet. When we reviewed the VPL-VW350ES's immediate predecessor, the VPL-VW600ES (*Sound & Vision*, May 2014 and soundandvision.com), we swooned over its detail, color, and brightness—but not its \$15,000 price. Ten grand is still a hefty chunk of change, but it's a lot closer to affordable than fifteen grand.

What does Sony give you for your \$10,000? It might be better to ask what Sony doesn't give you in comparison with the VPL-VW600ES. The VPL-VW350ES has the same 4096x2160 resolution; 2.06x zoom lens with powered zoom, focus, and shift controls; 3D compatibility; and

AT A GLANCE**Plus**

- Accurate color
- Ample brightness
- Smooth, detailed picture
- Minimal fan noise

Minus

- No iris control
- Doesn't include 3D glasses

panel alignment feature as the VPL-VW600ES. One thing you won't get in the step-down model are lens memory settings, which allow automatic zooming for content of different aspect ratios. Another main difference is light output: the VPL-VW350ES's 230-watt lamp is spec'd to output 1,500 lumens, while the VPL-VW600ES's 265-watt lamp is spec'd at 1,700 lumens. Also, the VPL-VW350ES lacks its predecessor's dynamic iris control—which would seem a big negative, but it's worth noting that the dynamic iris was a source of some irritation for Tom Norton in conducting his VPL-VW600ES review due to observed brightness pumping. (Though, to be fair, Tom reports that this was an infrequent occurrence and didn't prevent him from leaving the dynamic iris active to achieve the best blacks.)

The VPL-VW350ES also has the same sleek, black, kinda boxy design as its more expensive older brother. The jack pack located on its side includes two HDMI 2.0 inputs (one with the HDCP 2.2 digital rights management required for viewing new Ultra HD content), RS-232 control, IR, and LAN ports, and 12-volt trigger outputs. A built-in IR emitter beams signals from the projector's front to Sony's battery-powered active shutter 3D glasses (not included).

Sony's remote control provides everything you'd want in a video projector handset. It's big and backlit, with large, evenly spaced buttons that are clearly labeled. A group of keys up top lets you easily switch between picture memories without having to cycle through an onscreen menu; two additional groups on the bottom half let you tweak settings such as brightness, contrast, contrast enhancement, reality creation (detail), and gamma correction on the fly.

RATING**Sony VPL-VW350ES 4K SXRD Projector**

2D Performance ★★★★★

3D Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

**Setup**

The VPL-VW350ES has a built-in test pattern to adjust picture size, lens shift, and focus. After aligning the picture on my 80-inch-wide Stewart Filmscreen Cima Neve screen, I tweaked the focus with my eyes close to the screen using the projector's remote (love that power focus control). Though I didn't need to take advantage of the lens shift adjustment, the VPL-VW350ES lets you shift the image +85/-80 percent of screen height vertically, and 31 percent horizontally—useful for installations where you need to position the projector off center from the screen. The Sony's panel alignment feature also proved useful for removing a slight amount of color fringing.

I made my initial picture adjustments in the projector's



THE VERDICT

Sony's lowest-priced 4K projector to date is packed with features and delivers a bright, beautiful picture.

PROJECTOR

SONY VPL-VW350ES 4K SXRD PROJECTOR

PRICE: \$10,000

Sony • sony.com

Reference preset, which provided fairly accurate gamma and color points, but also a too-warm color temperature at its default D65 setting. After calibrating the VPL-VW350ES in that mode, I eventually decided to go back and redo everything in Cinema Film 1 mode. Why? For some reason, the Sony's contrast ratio in Cinema Film 1 mode was dramatically better than in Reference mode. And since the projector doesn't provide any dynamic or manual iris controls to deepen black levels, this turned out to be something of an issue during my review of the VPL-VW350ES.

It might cost much less than its predecessor, but the VPL-VW350ES appears to be another monster when it comes to light output: I measured a whopping 52 foot-lamberts in Bright TV mode, roughly the same peak output that we measured when we reviewed the VPL-VW600ES. In Cinema Black Pro mode with Low lamp mode and Medium contrast enhancement selected, peak brightness was a much tamer 26.2 ft-L. Combined with the 0.004 ft-L black level that I measured with those

settings, the result was a respectable best-case contrast ratio of 6,217:1.

Other settings I tapped in the Sony's Expert setting menu included BT. 709 color space and 2.2 gamma (the projector provides a wide range of gamma presets). High and low RGB custom color temperature adjustments are provided, and the Color Correction menu has hue, saturation, and brightness adjustments for primary and secondary colors.

Settings that I didn't make use of, but you might, included x.v.Color (supports an enhanced color gamut for x.v.Color-encoded content) and Input Lag reduction, a feature aimed at gamers. Unfortunately, but not surprising at this point, unlike Sony's flagship VPL-VW1100ES, the VPL-VW350ES will not support the wide DCI color gamut that seems to be the premium video quality target now for future Ultra HD content, including Ultra HD Blu-rays at some point. Similarly, the inputs only accept up to 8-bit 4:2:0 color, rather than the 10-bit content that might appear eventually. But it will accept 4K/60p signals, and the HDCP 2.2-

compliant input means it'll be compatible with 4K copy-protected Ultra HD discs and video streams going forward. (Unlike most Ultra HD smart TVs being released today, the projector does not have an onboard chip for HEVC decoding of such content; with no streaming platform on board, it's not required, as that function will be handled by the attached source component.)

As expected, the projector's Motionflow feature's Smooth High and Smooth Low settings boosted motion resolution on test patterns, but at the cost of adding Soap Opera Effect (less noticeable in Smooth Low mode). The Impulse and True Cinema modes had no effect on motion resolution, while Combination boosted motion resolution without adding SOE.

The VPL-VW350ES's fan was exceptionally quiet, especially with the Low lamp mode selected. I barely noticed fan noise even with the projector situated directly behind my seating position.

Performance

I started out my evaluation of the VPL-VW350ES by watching Blu-rays using Pioneer's new BDP-88FD universal player, with the player first feeding the Sony straight 1080p and then upscaling the signal to 4K resolution. In *Lucy*, another over-the-top sci-fi concoction from French director Luc Besson, colors in the lobby of the swanky hotel where Lucy (Scarlett Johansson) is forced to deliver a mysterious briefcase looked rich and sumptuous—in particular the main character's red minidress. And when Lucy was next brought to the drug kingpin's suite and made to open the suitcase at gunpoint, the texture of the wood-covered walls and her leopard-fur coat looked wonderfully distinct.

Comparing the Pioneer player's 4K upscaling with the Sony's, the Pioneer had a definite edge (for \$2,000, it had better), though the VPL-VW350ES was also no slouch in the scaling department. Next, I turned to some content stored on Sony's FMPX10 4K media player, including a few 4K episodes of *Breaking Bad* and a nature doc on California's Redwood National Park. The picture looked smooth, clean, and detailed. I have to say, though, that watching that content from Sony's media player had nothing on *Lucy* upscaled by the Pioneer, even



● The VPL-VW350ES is housed in a sleek black case.



TEST REPORT

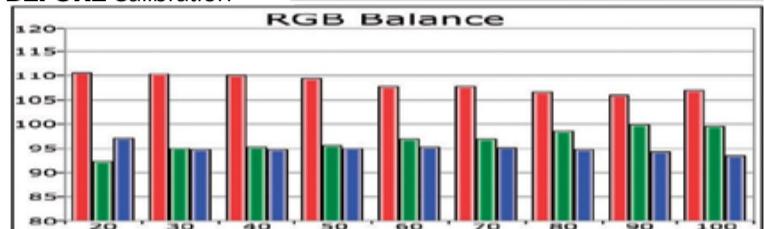


See [soundandvision.com](#) for full lab results and technical definitions

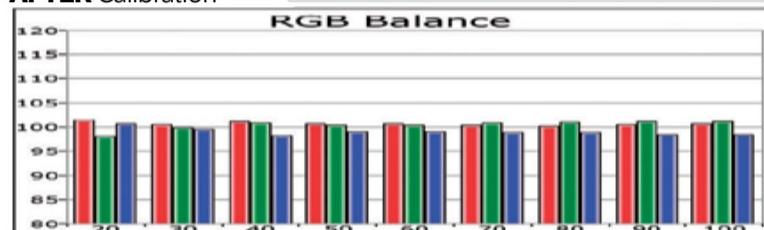
Test Bench

Sony VPL-VW350ES 4K SXRD Projector

BEFORE Calibration



AFTER Calibration



FULL-ON/FULL-OFF Contrast Ratio: 6,217:1

FOR the picture settings plus additional details on calibration and video processing tests for this review, go to [soundandvision.com](#).

PRE-CALIBRATION measurements were made in the Cinema Film 1 preset at the default settings. Post-calibration measurements were made in the same mode. With the Sony VPL-VW350ES's Lamp mode set to Low and Contrast Enhance set to Medium, its black level measured 0.004 ft-L and peak white 26.2 ft-L for a contrast ratio of 6550:1. With Contrast Enhance switched off, black level measured 0.005 ft-L and peak white 26.7 ft-L for a contrast ratio of 5340:1. Contrast ratio measurements in Reference and User modes were significantly lower.

BEFORE calibration, the Sony's grayscale showed a reddish bias at all IRE levels. The Delta E of its pre-cal grayscale averaged out to 8.6; calibration improved that average to 1.8, with a high of 2.7 at 20 percent brightness. Grayscale tracking was smooth throughout the full brightness range. (Delta E is a figure of merit that indicates how closely a display adheres to the Rec. 709 HD color standard. Experts generally agree that levels below 3 are visibly indistinguishable from perfect color tracking.)

THE Delta E of the Sony's color points in the Cinema Film 1 preset default settings averaged a just-OK 4.2. Calibration improved that to 3.1.

WITH the 2.2 Gamma preset selected, gamma in the Cinema Film 1 mode averaged 2.2, hitting 3.0 at 90%.

THE Sony passed all of our standard- and high-def video processing and clipping and luminance/chrominance multiburst tests.—AG

SPECS

Dimensions (WxHxD, Inches): 19.5 x 7.75 x 18.25 • **Weight (Pounds):** 31 • **Video Inputs:** 2 HDMI 2.0 (1w/ HDCP 2.2) • **Other:** LAN (1), RS-232C, IR, DC 12V (2), USB (software upgrades only)

when the image was displayed on an 80-inch-wide screen—which confirms a suspicion I've had for some time that a high-quality 2K source can make for compelling viewing on a 4K display.

I dove deeper into the 4K versus 2K issue and decided to compare a few specific scenes from *The Amazing Spider-Man* sourced as Ultra HD from the FMPX10 player and the same content on Blu-ray upscaled to Ultra HD by the Pioneer player. Viewed from an 8-foot distance, differences between the two were vanishingly small.

However, when I paused the Sony 4K player on a shot of industrial supplies in Oscorp Industries' lab and moved up to within 2 to 3 feet from the screen, I could clearly read a label stating, "Caution: This contains potentially hazardous materials." At that distance, the same text in the image upscaled by the Pioneer was largely illegible. When I scooted back to my normal 8-foot viewing distance, however, the difference between the two was impossible to discern. The takeaway? That 4K does indeed look more detailed than 2K—but you need a damn big screen to appreciate it.

While the VPL-VW350ES's measured contrast and black-level performance were well below those of the VPL-VW600ES, shadows still looked adequately deep with the projector set to its Cinema Film 1

mode. In another scene from *Lucy* where she escapes her captors and hijacks a taxi, the nighttime sky appeared as a solid shade of black. When I watched the same scene with the projector set to its calibrated Reference mode, however, deep shadows looked more of a dark gray.

3D Performance

Sony does not supply 3D glasses with the VPL-VW350ES, but the integrated RF emitter is compatible with Sony TDG-BT500A glasses (\$50) or an equivalent. The projector's 3D performance with Sony's glasses was very good: Pictures looked solid, bright, and punchy (no surprise given the VPL-VW350ES's above-average brightness), and there were only a few instances where I spotted crosstalk. 3D depth was also impressive. When I watched a scene from *Pacific Rim* where Raleigh Becket walks across a beam on a wall being constructed to block out Kaiju, the grid of crisscrossed beams in the distance appeared to extend deep into the screen. Sony's optional glasses were also lightweight and comfortable, so no complaints there.

Conclusion

At \$5,000 less than Sony's next-least-expensive 4K projector, the VPL-VW350ES is a seriously good value. Properly set up, it delivers a stunning picture, with accurate color, good contrast (despite its lack of a dynamic or manual iris control), and brightness to spare. Plus it comes with most of the amenities you'd expect from a high-end projector, including motorized focus/zoom adjustments and lens shift. If you're considering scaling up to a screen size that will make an extra investment in 4K worth it, the VPL-VW350ES is worth your consideration. ♦



● One of the Sony's HDMI inputs offers HDCP 2.2 compliance.

Bowers & Wilkins

Sounds beautiful

With the new CM Series, beauty is so much more than skin deep. Of course, with their clean lines and high-quality finishes these are some of the most elegant speakers we've ever produced. But thanks to our Decoupled Double Domes and tweeter-on-top technology you won't believe how beautiful your music can sound.

bowers-wilkins.com



Decoupled Double Dome tweeter



You Can Spell It Ep“sun”

By Michael P. Hamilton

Epson PowerLite Home Cinema 3500 3D LCD Projector

PRICE \$1,600

EVEN FOR THOSE OF US WITHIN the electronics industry, the constant evolution and ascending levels of technology combined with an ever-lower price of admittance continues to astonish. In the universe of projected light, a stellar example of this can be found in the Epson PowerLite Home Cinema 3500 projector.

In Studio 1 of my lab, there remains a Runco DTV-1101 9-inch CRT projector that still sees use on special occasions. Not so much for the fondness of an era gone by; rather, because it is driven, pixel-free at 1080p resolution, by a Lumagen processor. This provides a reference bridge from the land we once knew across the Digital Rubicon to the world where we now reside.

I positioned the Epson directly on top of the floor-sitting Runco, with the intention to first audition the 3500 on the residing 87-inch-wide 16:9 Stewart StudioTek 130 G3 screen. When I initially sized the setup patterns within the Stewart's boundaries, a wry smile crossed my face. I decided to use the green center-positioned lens of the Runco CRT to help center the Epson, as the 3500 has lens offset relative to the dimensions of its attractive, high-gloss white, 14.9-pound chassis. I couldn't help but hear Joel Silver, head of the Imaging Science Foundation, in one of those *Saturday Night Live* off-stage voices, referring to how he would like 8K quantum dot technology today but is still waiting for the flying car promised some 50 years ago. The irony was precious: I was using a state-of-the-'90s-art, \$45,000, 180-pound behemoth projector as a stand for a \$1,600 light cannon that likely weighs about the same as that Runco lens by itself. Indeed, what a long, strange trip it's been.

AT A GLANCE**Plus**

- Epson puts the “light” in PowerLite
- Well suited for brighter environments
- Adjustments galore
- Includes two pair of 3D glasses

**Minus**

- Dynamic range short of true black
- Default color tracking errors

Setup

Priced well below the least expensive LCOS offerings of *Sound & Vision* mainstays JVC and Sony, the \$1,600 3LCD Epson 3500 is positioned in the upper middle of the 16 models in the company's Home Cinema projector category, and it's \$1,300 less than the [Epson 5030UB](#) that Al Griffin awarded a Top Pick in April 2014.

Nonetheless, the 3500 manages to include nine-point customizable gamma in addition to five preset gamma selections and adjustable high-range (Gain) and low-range (Offset) RGB White Balance controls. A full color management system (CMS) provides adjustment of hue, saturation, and brightness for the red, green, and blue primary colors as well as the secondary colors cyan, magenta, and yellow, making the projector highly versatile in the hands of a professional calibrator (or a suitably equipped enthusiast).

In the Image Settings menu, advanced adjustments coupled to the Sharpness control allow for Thin/Thick Line Enhancement for vertical and horizontal lines. Within the Signal menu, controls exist for Super

Resolution (Detail Enhancement), which was best left at 1 for broadcast content and 0 for Blu-ray (though the latter had caused some unexpected modest dimming of light output). I left Image Processing in the Fine setting; Fast was strictly for gaming. See the expanded Test Bench section at [soundandvision.com](#) for more about the effect of these controls, which range from subtle (if not placebo-like) to outright ghastly.

Ten memory recalls came in handy while juggling measurements I made between two different screen materials (see below). Each recall can be named using a default label such as Sports, Game, or DVD, or you can customize it with up to 12 characters.

Manual lens shift (if any at all) is the norm at this price, as are manual zoom and focus, and such is the case here. While not a benchmark in precision machining, the Epson's lens shift, with 60 percent vertical and 24 percent horizontal range, is purposeful, though the horizontal and vertical lens shifts were somewhat interactive and necessitated a bit of finesse to land perfectly at the sweet spot.

Alignment of the internal red, green, and blue 0.61-inch thin film transistor LCD panels is accomplished via a 176 multi-point system affording precision convergence—that capability is something of a surprise at this price. Panel convergence was good out of the box, though, and a check of adjustment parameters revealed that some alignment was probably done at the factory, with the horizontal and vertical registries indicating input data. At the 100-hour mark on the lamp timer and prior to calibration, a recheck indicated that some maintenance alignment was required to restore the same image “snap” as when first unboxed. It's worth noting that panel alignment adjustments don't literally manipulate the physical panel positioning but are made through digital compensation, and overdoing this can inject noise subtleties that mar fine image details. But from my viewing distance, a bit of touch-up proved beneficial and didn't hurt the overall clarity.

There are three modes for lamp intensity (labeled Power Consumption): ECO, Medium, and High. In ECO (where I ran the unit between the two studios and screen sizes), the fan was inaudible a few feet from the unit. Selecting Medium or High presses the accelerator on lumen output and ramps up fan speed, which is discernible absent an audio soundtrack playing over the fan. A bit



RATING

Epson PowerLite Home Cinema 3500
3D LCD Projector
2D Performance ★★★★★
3D Performance ★★★★★
Features ★★★★★
Ergonomics ★★★★★
Value ★★★★★

THE VERDICT

Powerful light output with quiet operation and excellent build quality partner with 3D at an attractive price.

of light leaks from the projector, but the louvers for the front-ported fan exhaust are at an angle, allowing only a muted glow from the optical chamber when viewed directly front-on. Epson estimates nominal lamp life to be 3,500 to 5,000 hours, depending on mode, but given what I deem to be a bargain of an acquisition price for the projector, I wouldn't be shy about retaining optimum performance with more timely lamp replacement.

As with most products these days, the manual is on a disc, but Epson also makes it available and searchable online. Kudos to Epson for the depth of documentation—a lost art that other manufacturers should consider emulating.

The included, backlit remote has a solid feel with direct access to every input and adjustment category.

Plug and Play

I eventually decided on using the Epson in my Studio 2 (the larger of the two), employing a 106-inch-wide (122-inch-diagonal) 16:9 Stewart FireHawk G3 screen, as that better represents the more common application of this type of machine. Not so much this particular Stewart screen, which would cost more than the projector, but one might expect this projector to land in an environment with differing levels of ambient light and with a screen made to address that task. With walls of light brown, which Munsell color classification defines as nearly

neutral, this space typifies a multipurpose environment rather than a dedicated home theater.

With the Epson placed upon a tallish equipment rack that positions most projector lenses near the middle of the screen with minimal lens shift, the resulting throw distance from the 122-inch-diagonal screen was 18 feet, 5 inches, with plenty of wiggle room. Epson specifies a throw ratio of 1.32 (Zoom: Wide) to 2.15 (Zoom: Tele) from the 1.6:1 zoom lens.

I watch a great number of NHL games from broadcast, as well as live. I'm fortunate to have a rock-solid cable provider that delivers impressive signal quality, and with the Epson, I found myself pulled into the action seconds after the opening face-off. In many ways, hockey is an excellent torture test for evaluating all aspects of a display device. Even the untrained eye can quickly determine if the ice looks white or imbued with a color hue, so it equally serves as a real-life grayscale test. Fast camera turns that follow speedy on-ice action against the backdrop of fixed signage on the "boards" produce never-ending challenges for motion processing. With the Motion Detection setting at 4 for networks broadcasting at 1080i, not once did the Epson ever give me pause to question its aplomb in this regard. (This function is defeated with a progressive-scan incoming signal.)

Epson claims the 3LCD architecture offers equal lumens of color brightness and white brightness, and I'm convinced: The 3500 made team uniform colors leap off the screen. Mind you, not with the neon-like syrupiness of oversaturation you see from boosting the color control; that was set to 0. I felt like I had a seat on the glass behind the home bench. So enamored was I after a few days of use that I began juggling my schedule to make time to watch games, looking forward to the big, dynamic image and smooth fluidity of motion delivered by this projector performing as my everyday TV.

Worth an incidental mention is the Epson's built-in audio. Unorthodox as it appeared and eager to get an image up and running, I initially connected the unit via HDMI to the

EPSON POWERLITE HOME CINEMA 3500 3D LCD PROJECTOR

PRICE: \$1,600
Epson • (800) 463-7766 • epson.com

PROJECTOR

During the music-only overture on Sony's restored *Lawrence of Arabia*, the projector once more revealed a design trade-off: the inability to completely go to black, no matter the Auto Iris setting. As the London Philharmonic Orchestra thunders away on the Oscar-winning Maurice Jarre soundtrack, the projected image, which should be absolute black absent video content, is instead awash with a grayish hue. When the opening credits appear, as Peter O'Toole prepares for his motorcycle ride, black bars top and bottom of the 2.19:1 active image show the disparity against the black Velux of the Stewart screen frame. Still, despite such criticism, one must consider the application of the projector. If the thought is to displace a flat panel with a very large image for everyday TV viewing in some ambient light, then the occasional two-steps-back can be easily dismissed. For \$1,600 plus the price of an accompanying screen, you can proudly paste that "Go Big or Go Home!" sticker on the bumper of the minivan.

3D Viewing

With 3D becoming scarcer than Kryptonite, my inclination was to give it due respect but not dedicate a calibration to it, instead using Epson's default 3D settings. My experience with 3D on flat panels has shown that manufacturers tend to enable every brightness-pushing circuit available in an effort to wring out every picolumen of light. While shortage of illumination is hardly a problem for the Epson 3500, my sampling of its 3D wares began in the 3D Dynamic mode. The Epson's versatility with ease of placement and setup makes it a family-friendly projector, where 3D may hold an attraction for younger viewers (for whom a great deal of 3D content exists). My personal feelings about 3D are less than enthusiastic, but I



● The Epson offers manual lens controls.



TEST REPORT



See soundandvision.com
for full lab results and
technical definitions



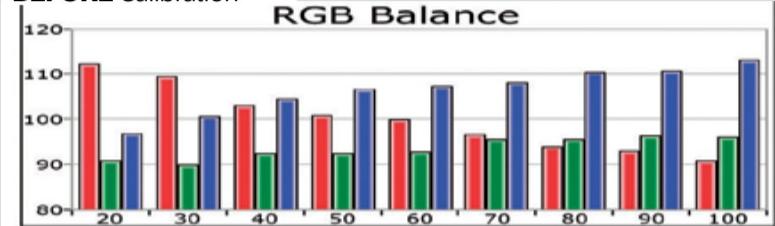
SPECS

Dimensions (WxHxD, Inches): 18.3 x 6.2 x 15.5 (including feet) • **Weight (Pounds):** 14.9 • **Replacement Lamp:** \$299 each • **3D Glasses:** 2 pair included, extras \$99 each • **Wireless LAN Module:** \$99 • **Video Inputs:** HDMI (2, 1 with MHL), component video (1), composite video (1) • **Audio Inputs:** RCA (1) • **Other:** D-sub 15-pin (1), USB (1), mini USB (1, service only), RS-232c (1), 12-volt trigger out (1)

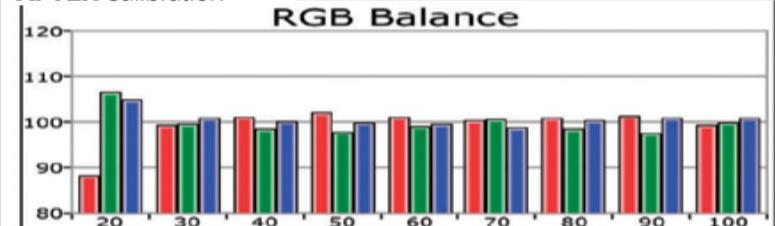
Test Bench

Epson PowerLite Home Cinema 3500 3D LCD Projector

BEFORE Calibration



AFTER Calibration



FULL-ON/FULL-OFF Contrast Ratio: 1,380:1

ALL readings were taken with a Minolta CS-200 colorimeter positioned 1 meter from the screen. Luminance readings were taken off the screen material and direct from the lens. Contrast ratio measurements were Full Raster 100 IRE On/Full Raster 0 IRE Off.

WITH the 3500's auto iris and power consumption set to Normal, in Natural mode on a 100-inch-diagonal Stewart StudioTek 130 G3 screen with 1.3 gain, contrast ratio was 1,380:1. With auto iris off, contrast ratio measured 295:1. Maximum brightness in Dynamic mode was 90.98 ft-L at 8 inches from the lens and 51.94 ft-L off the screen.

ON a 122-inch-diagonal Stewart FireHawk G3 screen with 1.1 gain, the contrast ratio dropped to 789:1 with the iris at Normal. With auto iris off, measured contrast ratio plummeted to 74.0:1. Maximum brightness in Dynamic mode with this material was 15.24 ft-L.

THE average Delta E of the Epson's pre-cal grayscale averaged a very high 13.00; calibration improved that immensely to an average of 2.84, with a spike at 20 IRE of 11.08 skewing the results. From 30 to 100 IRE, the average was 1.81. (Delta E is a figure of merit that indicates how closely a display adheres to the Rec. 709 HD color standard. Experts generally agree that levels below 3 are visibly indistinguishable from perfect color tracking.)

THE Delta E of the Epson 3500's color points with default settings averaged 5.31. After calibration utilizing the color management system, the average improved to a remarkable 0.23.

TARGETING a Gamma Point of 2.35, Epson's default 0 Gamma preset in Natural mode netted a pre-cal gamma tracking average of 1.77, attributable to the green push resulting from that color point falling outside the Rec. 709 triangle. Post-cal gamma tracking averaged 2.23 after a fair amount of time calibrating with the 9-point Custom Gamma control.

THE Epson had no trouble with any of our video-processing tests, save for 2:2 SD, a common and largely inconsequential failure. With upconverting receivers virtually commonplace and SD sources facing extinction, this should prove to be a non-issue with everyday content.

—MPH

attribute that to having to wear vision-corrective glasses; doubling down with 3D lenses is quite an annoyance. However, I acknowledge the fascination with 3D, and I do not chastise those who embrace it. Those who do will find two pairs of durably constructed active-shutter glasses accompany the projector, rechargeable via USB. A full charge affords a claimed 40 hours of "on" time, and Epson says a scant 3 minutes of charging will yield 3 hours; how handy is that at a moment's notice?

Transformers: Dark of the Moon revealed a new twist on the Epson's contrast ratio performance: With 3D glasses, the black bars of the 2.40:1 presentation displayed in the manner you'd wish for in 2D, with the screen disappearing and the image levitating. With the auto iris set to normal, I fortunately saw no overt signs of pumping as various scenes whisked in and out of bright and dark transitions. When I toggled between 3D Dynamic and 3D Cinema modes, I noticed the extra "pop" the Dynamic mode lends.

Pixar's *Brave* pulled me in for a rather extended period as I admired the lush color palette the 3LCD technology accentuates. My recollection of DLP being this admirable with 3D was on a Runco D-73d dual-projector, high-output, LED affair at more than 30 times the price. I'm not at all suggesting that the Epson 3500 competes in the same strata, only that the argument of equal color brightness and white brightness was given credible evidence by the *Brave* disc. Merida's emblazoned locks as she whisks around the kingdom dispel the notion that 3D is typically dark and drab, a notion I'm left with by most single-chip DLP 3D projectors.

Conclusion

My time with the Epson PowerLite Home Cinema 3500 proved it to be chameleon-like, changing as needed with screen

material or environment. Quiet operation in ECO, copious light output, superb color saturation, a full suite of adjustment parameters for tailoring the image in your surroundings, and a satisfying black level even when partnered with a generous screen make this a compelling contender to similarly priced projectors and the largest flat panels. While Epson makes Pro Cinema models with ISF and THX certification for those seeking screening-room accuracy, the 3500 borrows most of those attributes minus the truly inky blacks afforded by greater precision and a considerably steeper investment. A less than state-of-the-art measured contrast ratio belied observation; while I would have appreciated a deeper black level, I never felt it to be overly deficient. Full-screen broadcast content exhibited black levels that composed the image in an eminently enjoyable manner. It took the letterbox bars on wide-screen Blu-ray movies to call attention to the Epson's floating black level.

The collaborative effort by Epson's color science, projector engineering, and product management teams has delivered an out-of-the-box picture that, in the Natural color mode with screen material designed for multipurpose environments, makes for compelling image fidelity.

Calibration, however, should not be dismissed for fine-tuning the image to compensate for screen specificity, viewing surroundings, and lamp wear-in.

Taken in total, then, the Epson 3500 boasts dazzling "you-are-there" size partnered with an image as dynamic as a Manny Pacquiao punch—delivered at a price that lets you attend the big match in primo seats and then look for yourself in the crowd at home on DVR. Big fun for less funds, especially if 3D fits your fancy, makes this projector an easy recommendation. ♦



● Epson's remote offers direct access to each input.

High Performance Audio
Meets Comfort and Style



"OPPO's first headphone, the PM-1, uses a planar diaphragm to produce a luxuriously warm sound that becomes addicting on its own terms."

"If you want headphone listening at an epic scale, hearing the PM-1 is like dying and going to headphone heaven."

- Mark Fleischmann, *soundandvision.com*, October 2014



Universal Blu-ray Disc Player
BDP-105: \$1199
BDP-105D: \$1299



Headphone Amplifier,
USB DAC & Pre-amplifier
HA-1: \$1199



Planar Magnetic
Headphones
PM-1: \$1099, PM-2: \$699

TEST REPORT

Big Picture, Small Price

By Thomas J. Norton

BenQ HT1075 DLP Projector

PRICE \$1,199**FLAT-SCREEN 1080P HDTVs**

have been dropping in price. Nonetheless, short of a blowout sale, a really big-screen set—say, 70 inches diagonal or larger, even in plain old 1080p, will probably set you back a minimum of \$1,500. Compared with prices even two years ago, that's cheap, but for most buyers it's still significant cash.

What if you discovered that for less money you could get a picture that's three or more times the size (by area) of that 70-inch flat-screen set? How does \$1,200 sound?

That's the price of this 1080p BenQ projector. You'll have to deal with a few caveats, of course. Projectors can be used in modest ambient light, though they invariably work best in the dark and you'll want to control the lighting if you can. You'll also need a screen, though you can buy a fixed-frame, 96-inch-wide screen from value-oriented companies such as Elite, Carada, and Grandview for not much more than \$500. Installation for a projector is more complicated than simply plunking down a flat screen on a table. But if you're handy, it's only slightly more intimidating than mounting a flat screen on a wall.

Then there's periodic lamp replacement. BenQ's specs state that the lamp should last between 3,500 and 6,000 hours, depending on the lamp mode used, and the current replacement price is \$249. That stated lamp life is more generous than most,

AT A GLANCE**Plus**

- Bright, punchy picture
- Excellent color
- Compact size

Minus

- Mediocre blacks
- High vertical offset with limited lens shift

though it may be optimistic if your goal is to maintain like-new performance.

All that said, however (and as we've written in the past), there's nothing quite like having the impact of entering a true mini-movie theater in your home. And this affordable projector just might be your best path.

Description and Setup

Since BenQ is a major player in the business projector market, it isn't surprising that (case color excepted) the HT1075 single-chip DLP projector appears physically similar to the company's business-centric MH680, but with a modified input set. The genesis of the HT1075 is also obvious from its built-in mono speaker and modest, 10-watt (specified) amp. BenQ's Website speaks of the "immersive audio" offered by this system, but that sounds (and is) a bit over the top. The audio was more reminiscent of a mono FM radio than of Dolby

**RATING****BenQ HT1075 DLP Projector**

2D Performance ★★★★★

3D Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

most of the review but did find some source material that worked better in 2.2.

The projector has a rather steep vertical offset, which elevates the image well above the level of the lens in a tabletop installation. This means that for best results, you must position it either lower than the bottom of the screen or (inverted) above it. The HT1075 does have vertical lens shift, a rare feature in a home theater projector with business genes in its DNA. But this control doesn't offer much adjustment—less than a foot on my 96-inch-wide screen. If you still have to tilt the projector sharply to position the image on the screen, you'll risk keystone distortion, which produces a trapezoidal picture rather than a crisp rectangle. To correct for this, the BenQ also has both vertical and horizontal keystone controls. These might be handy for squaring up the picture for that summer movie night projected on your garage or barn, but we recommend against using keystone adjustment for a serious, permanent setup. It can degrade resolution.

The manual lens controls are also highly interactive. Altering the zoom by only a small amount throws the focus off, and vice versa. It took me several tries, going back and forth

Atmos. But it's there in a pinch if you're plopping the projector down temporarily.

The focus and zoom are both manual, and they're accessible on the top of the chassis. The other controls are there as well, but you'll communicate with the projector mostly from the excellent, backlit remote. The available settings include full color-calibration controls and a color management system (CMS). Unfortunately, two of the calibration Gain controls, red and blue, didn't work on my sample, but I was able to perform a more than acceptable calibration using the other adjustments (see Test Bench). The HT1075 is ISFccc certified. The two ISF calibration modes, Day and Night, are accessible to an ISF calibrator. There's also an unusually flexible range of gammas offered, with eight fixed settings from 1.6 to 2.8, plus a "BenQ" setting. I used 2.4 for



THE VERDICT

You wouldn't expect the type of performance this BenQ delivers for the price, but it will impress even a fussy videophile and blow away the newbie.

between focus and zoom, to produce a good result. If you use the projector intermittently—bringing it out of the closet just once a week to set it up for movie night—this might be a nuisance. For a permanent setup, however, you'll only have to do it once.

So, while setup was a bit tedious, I was finally able to achieve a good result by using the projector on a low table. The BenQ then easily filled my 96-inch-wide Stewart Filmscreen StudioTek 130 G3 projection screen (2.35:1, gain 1.3), located about 10 feet away.

Like most all projectors, the BenQ lacks the gee-whiz streaming apps accessible on almost any modern flat-screen HDTV. But you can easily add them via an appropriately featured Blu-ray player with Smart TV features or an inexpensive streaming media player such as an Apple TV or Roku. The projector does offer streaming and mirroring from devices having MHL (Mobile High-definition Link) capabilities (not tested).

One of the BenQ's unique features is wireless reception using a \$349 connectivity kit. The sources can be separated from the projector by up to 100 feet, though this may be limited by obstructions such as walls. We were unable to test this because the kit wasn't available yet at the time of

our evaluation, but if it functions as claimed, this is an appealing option. (Of course, one could always purchase a third-party wireless HDMI transmitter/receiver kit for the same amount or less.)

Viewing

I began as I usually do by running the projector for at least 100 hours to let the lamp settle in before I performed measurements and undertook serious viewing. Since the burn-in was done in a den prior to my moving the BenQ into my main home theater, I simply shined the projector onto a wall, generating an image roughly 4 feet wide. Moreover, the wall wasn't a smooth white surface but was actually textured and beige! I mention this because, even with this non-optimum setup and "screen," the picture was highly watchable, and I used it as my go-to TV for several days.

That said, I suspect that more than a few video calibrators and serious videophile readers have now crumpled to the floor, foaming at the mouth and writhing in agony. Keep in mind, however, that more than a few buyers of a projector such as this will start out using it in just this way (though a smooth white wall would be nice!) while they save up for the decent screen that any projector deserves. They won't be

BENQ HT1075 DLP PROJECTOR

PRICE: \$1,199

BenQ America • (214) 299-7900 • benq.us

PROJECTOR



disappointed, and some might wonder if a proper screen will be a worthwhile future investment. (Trust me—it will.)

Nor did I calibrate the projector immediately after I moved it into my Stewart screen-equipped home theater (with, as noted, a 96-inch-diagonal image). It looked amazingly good, and very bright to boot. It was also extremely quiet in the Economic Lamp Power setting, and not intrusive in the higher, Normal setting. At first, I used the Cinema Picture Mode in the Economic Lamp Power setting, with the Contrast control on the factory default of 50. Only later did I discover that in those settings, the peak white level on my screen was almost 40 foot-lamberts! This little BenQ is a torch!

Not surprisingly though, given its price, its black level performance was far from amazing. Even at the lower settings of the Contrast control that I ultimately settled on (to reduce the output to a still bright 20 to 25 ft-L), the blacks changed very little by measurement and not at all by eye. Those gray blacks remained one of the projector's prime flaws, likely unavoidable in such a budget design.

In the past year or so, I've viewed a lot of projectors from JVC and Sony, not to mention plasma, locally dimmed LED LCD, and even OLED flat screens—all of which offered scrumptious blacks but cost considerably more than the BenQ. The BenQ couldn't come close to that, but I did adjust to its grayish look on dark, low-contrast scenes. Scenes with dark backgrounds and bright highlights, however, fared much better, thanks to the projector's high brightness.

The BenQ did fail our 2:2 HD and 2:2 SD upconversion tests, a relatively inconsequential test on which more than a few displays have also stumbled. But it passed all the others.

Other issues? Yes, I did occasionally see DLP rainbows, despite the projector's fast, multi-segment color wheel. But I'm very sensitive to this artifact of single-chip DLP projectors that employ a color wheel; some viewers can't see DLP rainbows at all. For the most part, I was able to ignore them. There's also some light leakage

from the side of the projector's case, but that shouldn't be an issue if the projector is mounted either below or above eye level. There was, also, a substantial amount of dither-like video noise in the picture, particularly on dark scenes. But this was essentially invisible at a typical viewing distance.

Beyond those reservations, there's a lot to like here. The picture is bright, bold, and sharp (at the optimum 0 setting of the Sharpness control) without going over the top into edge enhancement. Even before calibration, it looked very good in the default Cinema Picture Mode, despite some so-so measured results. This is good news for the majority of buyers who are unlikely to spend \$400 or so to calibrate a \$1,200 display. Calibration gave me slightly more natural flesh tones and a more reassuringly accurate set of color measurements, but many viewers will be happy with the results out of the box. Just keep in mind that parts variations in any display, not to mention the projection lamps, can produce differences from one sample to another that only a full color calibration can level out.

Calibrated or not, the BenQ produced very satisfying pictures. *Oblivion*, a beautifully crisp transfer, was sharp from corner to corner (except for the dream scenes, which use a softer edge focus). The film's few dark scenes (particularly in the ruins of the underground library) suffered little from the BenQ's limited blacks because those scenes have bright highlights. The film's deliberately muted color palette was also perfectly rendered. But the projector can produce brilliant color where needed. The computer-animated *Frozen* looked eye-poppingly glorious, particularly in the scenes where Anna is searching for Elsa in the ice- and snow-covered mountains. In both of these films, however, my 2.35:1 projection screen did eliminate any distractions from the BenQ's gray (rather than deep black) letterbox bars, since those bars lie beyond the active screen area.

● The HT1075 features a built-in speaker that could be helpful in a pinch.



TEST REPORT

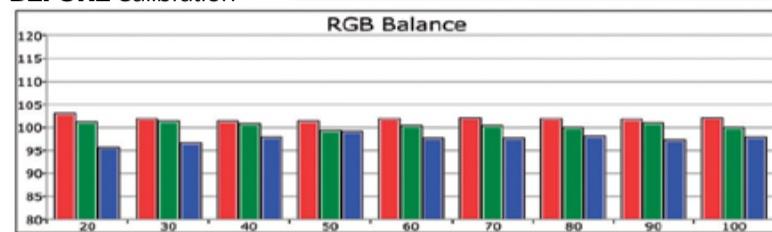


See soundandvision.com for full lab results and technical definitions

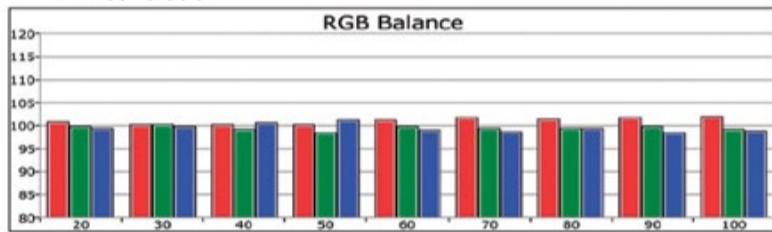
Test Bench

BenQ HT1075 DLP Projector

BEFORE Calibration



AFTER Calibration



THE measurements given here were made using CalMAN measurement software from SpectraCal, together with Photo Research PR-650 and Klein K-10A color meters and the VideoForge pattern generator from AVFoundry.

FULL-ON/FULL-OFF Contrast Ratio: 1,062:1

THE measurements here were taken in 2D only. They were performed in the Cinema Picture Mode unless noted otherwise. With the projector about 10 feet from my 96-inch-wide Stewart Filmscreen StudioTek 130 G3 screen (gain 1.3), the lamp on Economic (at about 150 hours of use), the Contrast control on 25, and the Brightness control on 50, the peak white level was just under 20 ft-L, and the black level 0.0186 ft-L—the latter unimpressive by today's standards. The result is the full-on/full-off contrast ratio shown above.

INCREASING the Contrast control progressively increased the peak white, but it changed the black level very little. At a setting of 50, the peak white measured 39.98 ft-L, the black level 0.0189 ft-L, and the contrast 2,115:1. But 40 ft-L was a bit bright for 2D. So I did much of my viewing at a contrast setting of 32 (24.3 ft-L, full-off/full-on contrast ratio 1,293:1). Torch mode fans will also be happy to know that in the Bright Picture Mode's default settings, the projector produced 62.8 ft-L.

THE color calibrations were performed at the 20-ft-L settings. Before calibration, the color Delta E, in the Normal Color Temperature setting, averaged an impressive 1.72 (maximum 3.08 at 90%, minimum 1.06 at 20%). After calibration, the Delta E averaged 0.97 (maximum 1.93 at 100%, minimum 0.10 at 30%). (Delta E is a figure of merit that indicates how close the result is to the Rec. 709 HD standard. A Delta E below 3 is generally considered excellent and visually indistinguishable from perfect.) The calibration was complicated by the ineffectiveness of the red and blue Gain controls but was close enough prior to calibration that the remaining controls were able to produce the improved result.

THE 2D color gamut (not shown) was mediocre prior to using the Color Management System (CMS), with an overall Delta E of 6.78. After extensive tweaking of the CMS, it averaged 1.32.

AT a 2.4 setting of the Gamma control, the gamma averaged 2.26, with a minimum value of 2.19 at 20% brightness and a maximum of 2.31 at 80%. This setting worked for me on most sources, but on some material 2.2 worked better.—TJN

SPECS

Dimensions (WxHxD, Inches): 12.25 x 4.1 x 9.6 • **Weight (Pounds):** 6.06

• **Replacement Lamp:** \$249 • **3D Glasses:** Optional, \$59/pair • **Video**

Inputs: HDMI 1.4 (2), component (1), composite (1), MHL on HDMI 2 •

Audio Inputs: Analog stereo • **Audio Outputs:** Analog stereo • **Other:**

USB (2, Type-A and Mini-B), computer D-Sub 15-pin, RS-232



My 3D viewing of the BenQ was limited, but ghosting was minimal and the projector's superior brightness was just what the doctor ordered for 3D. You won't see 3D this bright in a theater, or in many home theater setups. If you're still deep enough into 3D to take the plunge and buy 3D glasses to go with the HT1075 (optional at \$59/pair) you might just be amazed by what you see.

But 3D viewing didn't come without issues. As first tested, the DLP 3D glasses wouldn't work unless connected directly to the projector with the USB charging cable—not exactly an optimum solution! In addition, the projector failed to pass 3D signals through two of the three new HDMI 2.0 AVRs I tried it with; neither a Marantz SR5009 nor a Denon AVR-X5400W would pass 3D to the projector, though a Pioneer SC-89 did. Both the Marantz and Denon triggered an onscreen notice suggesting the source (an Oppo BDP-103 BD player) was not compatible with 3D. Of course it is, so something was clearly awry in the HDMI communications (EDID) between these receivers and the projector.

BenQ subsequently sent us a new sample of the projector, together with revised glasses that worked perfectly with a direct connection from player to projector. (Be aware that a completely dark screen in 3D, as in a scene transition, appears onscreen as bright red when viewed without the glasses. This oddity disappeared with the glasses on.)

But the Marantz and Denon AVRs would still not pass 3D to the second BenQ short of activating the Oppo's "Forced 3D"

mode, which bypasses the EDID handshake. Few players have that option, however. To be fair, we have no way of knowing whether the communication issue was the fault of the projector or the AVRs. The Pioneer, Denon, and Marantz AVRs did, however, pass 3D to a JVC DLA-X35 projector, and a second Blu-ray player, a Toshiba model, suffered the same problem and was unable to pass 3D through the Denon and Marantz AVRs to the BenQ. Such is the mystery of HDMI that the introduction of any new version (2.0, in this case) brings with it a string of incompatibility bugs that only seem to work themselves out over time.

Conclusions

In the late 1990s, I had occasional movie nights for friends and members of the *Stereophile* and *Stereophile Guide to Home Theater* family. That was back in the CRT era, when the projector and processor under review approached six figures and the source was standard-definition DVD or (ulp!) Laserdisc. One week when the CRT projector broke down, I had to use a

new LCD projector that had just arrived for review. Those fledgling displays were pretty grim, and one attendee jokingly noted that I subjected the audience to a crummy LCD picture!

But make no mistake: Things have come a long way, and unless your movie-night party includes video guru Joe Kane's evil twin, no one is likely to make any negative comment about the BenQ's presentation. I certainly enjoyed all of the time I spent with it. ♦



You won't see 3D this bright in a theater.

JERRY RASKIN'S
NEEDLE DOCTOR

Established 1979

WWW.NEEDLEDOCTOR.COM



PRO-JECT REFERENCE PHONO PARTNER

NEW PRO-JECT DEBUT CARBON DC TURNTABLE

ONLY \$449.00

- ▶ INCLUDES ORTOFON 2M RED CARTRIDGE
- ▶ CARBON FIBER TONEARM
- ▶ AVAILABLE IN 7 COLORS



WHAT HI-FI?
SOUND AND VISION



PRO-JECT
XTENSION 9
\$2,499



PRO-JECT 2
XPERIENCE
CLASSIC
\$1,299



PRO-JECT
XPRESSION
CARBON
CLASSIC
\$999



PRO-JECT
RM5.1SE
\$999



PRO-JECT
RPM1.3
\$499



PRO-JECT
ESSENTIAL II
\$329



Toll Free 800.229.0644 | Phone 612.378.0543 | Fax 612.378.9024
Email info@NeedleDoctor.com | 6006 Excelsior Blvd., St. Louis Park, MN 55416

**WORLD'S LARGEST SELECTION
OF TURNTABLES, CARTRIDGES, AND NEEDLES!**

Tall, Dark, and Handsome

By Steve Guttenberg

GoldenEar Technology Triton Five Loudspeaker

PRICE \$1,998/pair

I'VE KNOWN QUITE A FEW speaker designers and owners of high-end companies, but GoldenEar Technology's CEO and co-founder Sandy Gross is the only one who's an avid art collector. He paints a little, too, but mostly expresses his creative side through the sound of his loudspeakers. Gross has developed a keen ear as a decades-long veteran in the speaker business, co-founding Polk Audio and later Definitive Technology. In 2010, he launched GoldenEar Technology at the CEDIA show in Atlanta, Georgia.

Gross knows good sound when he hears it. (While you might assume that's a given for anyone seeking a career in high-end audio, my experiences have often proven otherwise.) When you hang around with him, you get the feeling that his passions for great art and great sound feed off each other.

The Five Tritons

The Triton Five is but the latest installment in GoldenEar's Triton series, and it breaks new ground, filling in another gap in what is now a five-speaker lineup. These include the One (\$2,499 each), Two (\$1,499 each), and Three (\$1,099 each), which include built-in powered subwoofers in progressively shorter towers. The Seven (\$699 each), introduced in 2013, is a passive design, and the Five, also passive, represents its big brother, with the intent of driving deeper bass and higher dynamics from a slightly taller cabinet. The Five certainly looks and feels more expensive than its moderate \$999 each price point.

AT A GLANCE

Plus

- Sleek tower design
- Huge soundstage!
- HVFR planar magnetic folded ribbon tweeter

Minus

- Black is the only finish

would lead you to expect. As with all the Tritons to date, it's a lot of speaker for the money.

The Five's front baffle features a D'Appolito array of two 6-inch woofers flanking GoldenEar's High-Velocity Folded Ribbon (HVFR) planar magnetic tweeter. When you view the speaker from the side, it's easy to see that its medium-density fiberboard cabinet is raked back a few degrees to better aim the three-driver array towards a seated listener. The cabinet's non-parallel sides, and front and rear baffles, reduce internal standing waves. The Triton Five utilizes GoldenEar's passive balanced crossover technology, which was initially developed for the Triton One. Sandy Gross told me the crossover uses polypropylene capacitors to enhance resolution capability. A single set of solid metal binding posts provides a secure grip on your speaker cables terminated with banana plugs, spades, or bare wires.

The Triton Five's HVFR tweeter is identical to the ones used in most GoldenEar speakers, including the flagship Triton One. The only exceptions

are the soundbars and in-wall speakers, which are outfitted with similar but smaller HVFRs. The Five also features four 8-inch, side-mounted passive radiators (two on each side), which are located close to the floor to optimize bass coupling. GoldenEar's drivers are all said to be proprietary designs for which GoldenEar designs the tooling.

The Five, like its fellow Triton brethren, is covered in a black cloth sock that wraps around the front, sides, and rear. The top is fitted with a black gloss cap, and the bottom rests on a black gloss base.

Gross conceives all of the company's speakers, but he's not an audio engineer—so he relies on Bob Johnston, who leads a team of seven engineers to execute the plan. For the Triton Five, Gross started with the notion that this new speaker would be a bigger, scaled-up version of the Triton Seven and imagined it with two 6-inch woofers, the HVFR tweeter, and the slanted-back cabinet. He sketched out the cabinet's rough dimensions and put the engineers to work.

As development progressed, they tested and measured prototypes in GoldenEar's anechoic chamber, which is modelled after the one at Canada's National Research Council in Ottawa, Ontario. GoldenEar is one of the lucky few speaker companies to have an anechoic chamber of its own, which says a lot about its commitment to quality. Gross' ears had the final say on the Five's sound; he's the boss, after all.

Setting up a two-channel Triton Five system in my listening room was mostly a matter of determining how far the speakers would be placed from each other. I settled on 7 feet apart, slightly toed-in, and 8 feet from my couch.



● The Triton Five uses the HVFR tweeter found in other Triton models.

RATING

GoldenEar Technology Triton Five Loudspeaker

Performance	★★★★★
Build Quality	★★★★★
Value	★★★★★

That's where most speakers wind up in my room.

For multichannel home theater, you'd likely add GoldenEar's SuperCenter X center-channel speaker (\$600), SuperSat 3 satellites as surround speakers (\$250 each), and ForceField 4 powered subwoofer (\$700). And if you're thinking about the possibility of adding ceiling speakers (for use with a receiver or



THE VERDICT

At less than \$2,000 per pair, the Triton continues the GoldenEar value tradition with superb sonics at an attainable price.

LOUDSPEAKER

GOLDENEAR TECHNOLOGY TRITON FIVE LOUDSPEAKER

PRICE: \$1,998/pair

GoldenEar Technology • (410) 998-9134 • goldenear.com

processor featuring Dolby Atmos or DTS:X), GoldenEar offers the Invisa HTR 7000 in-ceiling speakers (\$500 each). The age of object-oriented surround may be upon us, but two-channel home theater remains a viable alternative for folks with small rooms, or for anyone who wants to keep it simple, and that includes me.

I started my auditions with my reference two-channel gear—namely, a dCS Puccini CD player and, from Pass Laboratories, an XP-20 preamp and two XA100.5 100-watt

monoblock amplifiers. The sound was most definitely up to snuff, but I quickly moved on to a less costly real-world setup, utilizing a Yamaha A-S801 stereo integrated amplifier and an Oppo BDP-105 universal player.

Listening to a Pair of Fives

Whenever I review a set of tower speakers, there comes a time when I feel compelled to put the pedal to the metal—and for the Triton Fives, I grabbed a fistful of the newly remastered Led Zeppelin CDs. These albums sound more transparent than ever before, that's for sure. Robert Plant's lung-popping vocals reached out and knocked me over. When I turned up "Moby Dick," the full measure of John Bonham's primeval drum solo amply demonstrated the Fives' athletic abilities. The louder I played them, the better I felt! Indeed, I found these speakers seem to like moderate to high volume; they were less satisfying at hushed, late-night levels.

Rickie Lee Jones' *Pop Pop* CD is one of my go-to choices when I want unadulterated vocals. Through the Triton Fives, Ms. Jones' pipes sounded as natural as I've ever heard them, and string bassist John Leftwich propelled "Dat Dere" with his ever-so-nimble dexterity. *Pop Pop* forgoes added reverb or processing; we get just Jones and her merry band, and that's plenty. Purely acoustic music from violinist Joshua Bell and bassist Edgar Meyer's *Short Trip Home* CD rang true as well, thanks to the Triton Fives' tonal realism.

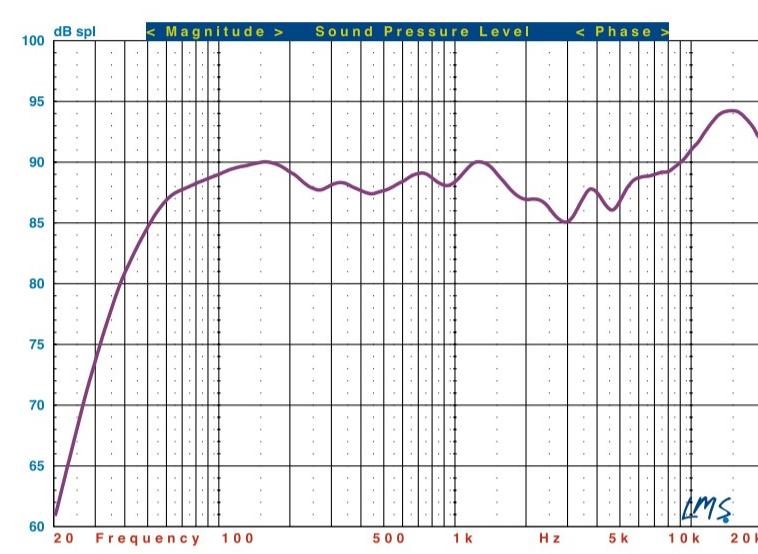
I love how the SACD of Miles Davis' *In a Silent Way* delineates each instrument's dynamic envelope, including Chick Corea and Herbie Hancock's swirling electric pianos, Tony Williams' cymbals, John McLaughlin's guitar, and of course Davis' trumpet, which is always floating above the fray. The mix is dense with energy and texture, and the Fives dug deep into the sounds of the session.

I settled in for some home theater trials with Richard Linklater's *Boyhood* and immediately forgot all about the Triton Fives. Dialogue was firmly



Test Bench

GoldenEar Technology Triton Five Loudspeaker



Triton Five (purple) +2.40/-3.46 dB, 200 Hz to 10 kHz; -3 dB @ 49 Hz, -6 dB @ 41 Hz; impedance minimum 4.35 ohms @ 3.9 kHz, phase angle -52.17° @ 2.9 kHz; sensitivity 88.5 dB, 500 Hz to 2 kHz.—MJP

SPECS

6 in woofer (2), 8 in passive radiator (4), 1x1.35 in HVFR folded ribbon tweeter • 8.1 x 44.25 x 12.3 in (WxHxD) • 40 lb

planted in the "phantom" center channel, and voices sounded natural. The film is devoid of special effects, so the Fives just went about their business without calling attention to themselves. I love the scene late in the film where Ethan Hawke's character sings and plays acoustic guitar with his children and extended family. The sound was so intimate, I felt like I was in the room with them all.

Terry Gilliam's whacked-out *The Zero Theorem* takes a very different turn. Qohen Leth (Christoph Waltz) is a depressed "entity cruncher" who spends his days trying to solve the titular theorem while working inside what looks like a giant steampunk computer. The soundtrack is big on texture, including low bass thumps and throbs, not to mention a blizzard of buzzes, bleeps, clicks, and whooshes. The Triton Fives served up the reverberant acoustics of Qohen's deconsecrated church/home, replete with the sound of a white pigeon fluttering about.

When I pumped up the Rolling

Stones' recently released *From the Vault: Hampton Coliseum (Live in 1981)* on Blu-ray, the first thing I noticed was Bill Wyman's bass playing. The band has never been the same since he left in 1992. Man, oh man, Wyman and drummer Charlie Watts' rhythms were so solid, and when the band stretches out and jams on "Neighbours," the crowd's cheers were set deep in the soundstage. In 1981, the Stones were still "the greatest rock 'n' roll band in the world." The Triton Fives left no doubt about that.

My reference Zu Audio Druid V speakers (\$5,400/pair) are in some ways more exciting performers—they have superior dynamic slam and more top-end sparkle—but the Triton Fives, at less than half their cost, make more bass, and the HVFR tweeter's treble is sweeter and resolves fine detail better. That makes for a very "livable" speaker. Once again, Gross and GoldenEar have delivered a fine work of audio art at a highly affordable price. ♦

● The Five is a scaled-up version of GoldenEar's first passive tower, the Triton Seven.

Getting the Balance Just Right

By Michael Trei

Yamaha Aventage RX-A2040 A/V Receiver

PRICE \$1,700

CHOOSING THE PERFECT A/V receiver for your home theater can be as tough as it was for Goldilocks to find the perfect bowl of porridge. Of course, we all want lots of features and plenty of power, but not if that means wasting money on bells and whistles we'll never use or power we don't really need. I find that in a single brand's receiver lineup, it's often the model just below the flagship that represents the best balance between price and performance. At that level, you still get just about every feature and most of the power available from the top model but with a substantial cost savings to sweeten the deal.

Yamaha's Aventage RX-A2040 appears to fall right into that type of sweet spot. At \$1,700, it's \$500 less than the RX-A3040 flagship, but it still comes with most of that model's features and can deliver more than 93 percent of its claimed two-channel power spec.

Despite playing second fiddle in Yamaha's receiver lineup, the RX-A2040 is truly loaded, boasting nine amplifier channels, each of which is rated to pump out 140 watts. There's a full package of wireless connectivity apps (including AirPlay, HTC Connect, and Wi-Fi) and a host of other onboard apps (including Spotify, Pandora, and SiriusXM). Surround modes are bang up to date, too, with Dolby Atmos having just been added through a post-launch firmware upgrade. The RX-A2040 can also handle Ultra HD video, with HDMI 2.0 inputs and outputs along with a UHD scaler. However, as with most receivers we've seen from the 2014 model year, it lacks the HDCP

AT A GLANCE**Plus**

- Rich, powerful sound with gobs of detail
- Dolby Atmos capable
- UHD-ready with 4K scaling and HDMI 2.0

Minus

- No HDCP 2.2 DRM to handle future UHD content
- Basic remote isn't backlit

2.2 DRM (digital rights management) capabilities that will probably be required to pass some future UHD content. This could be a deal killer if you plan to use

the RX-A2040 with a UHD (4K) display and sources (such as a forthcoming Ultra HD Blu-ray player), although one workaround would be to route your UHD sources directly to the display with a second HDMI link to the receiver just for the audio signal.

Like most recent high-end AVRs, the RX-A2040 is a handsome beast, with two large rotary knobs flanking a flip-down door that covers lesser controls, along with a set of front-panel inputs. With the door up, the only other visible switches are the main zone power button and a button to engage the Pure Direct listening mode. At 37 pounds, the receiver is pretty hefty, so the weight is supported by five feet instead of the usual four—an Aventage hallmark. Yamaha describes the central foot as an Anti-Resonance Technology

Wedge, designed to dampen chassis vibrations that could affect some internal components.

Setup

Unboxing and setting up the Yamaha went smoothly: I simply put it on the shelf below the everyday receiver in my rack and moved the cables over one at a time. The eleven pair of loudspeaker binding posts are all arranged neatly along the bottom center of the back panel, a layout that stops thick speaker cables from dangling in the way of other cables with less robust connectors. One minor consideration is that the binding posts aren't spaced for 0.75-inch double banana plugs, which meant that I had to switch some of my speaker cables over to the more common single bananas.

While many other receiver brands have been cutting back on their input options, Yamaha still gives you a pretty comprehensive set of connections. In addition to the eight HDMI inputs (one with MHL for smartphones), there are three component video inputs, five composite video inputs, and six analog audio inputs, including one with multichannel capabilities, plus a phono input for a turntable. S-video fans, however, are out of luck. Even though there are just nine power



RATING



Yamaha Aventage RX-A2040 A/V Receiver

Audio Performance	★★★★★
Video Performance	★★★★★
Features	★★★★★
Ergonomics	★★★★★
Value	★★★★★

THE VERDICT

Yamaha's one-step-down AVR delivers top-notch performance and features at a somewhat less than flagship price.

amp channels, the eleven pair of connectors allow you to configure and connect a couple of different setups, although you won't be able to run them all at the same time. For example, you can have front height speakers connected, but you won't be able to play them and the second-zone speakers simultaneously.

For most of my evaluation, I connected the RX-A2040 to my PSB Synchrony One main, center, and surround speakers, with my M&K 350THX handling the subwoofer duties. This was my first encounter with a Yamaha setup GUI in a few years, and I found the menus to be generally intuitive and easy to navigate, although they do assume that you have a basic knowledge of the terms and procedures associated with AVRs.

Rather than employing a third-party speaker-alignment package like Audyssey, Yamaha has long used its own proprietary YPAO speaker calibration system. The version that comes with the RX-A2040 can measure the room from up to eight different seating positions, using the supplied microphone. While the alignment procedure generally went smoothly, with each speaker in turn being sent a sweep tone, I did find it curious that

YPAO decided that both my Synchrony One C center-channel speaker and Synchrony S surround speakers were good down to 20 hertz. That was kind of a stretch, so after the automated calibration was completed, I followed up in the manual settings to make a few adjustments. To be fair, when it really gets down to critical listening, I generally prefer to do most of my auditioning with any EQ circuits like YPAO switched off. After all, my aim is to get a handle on the true sound of the receiver, not what the calibration program thinks my speakers should sound like. For the same reason, I like to turn off other sound adjustment features, such as YPAO Volume, Music Enhancer, and Extra Bass.

Considering this price level, I usually expect a pretty fancy remote, but the one supplied with the RX-A2040 is actually quite ordinary, lacking even something as basic as backlit buttons. On the other hand, Yamaha does offer their AV Controller App for your iDevice or Android, giving you far more comprehensive control than any remote could. And, of course, the app is backlit for dark room operation.

A/V RECEIVER

YAMAHA AVENTAGE RX-A2040 A/V RECEIVER

PRICE: \$1,700

Yamaha • (800) 292-2982 • usa.yamaha.com



Music and Movies

As usual, I started my evaluation by treating the RX-A2040 like a simple two-channel audiophile amp. Then I gradually brought in its additional capabilities using multichannel music and movies, but only after I had a handle on its basic sound. To that end, I started by playing "Dona Maria" from jazz bassist Rufus Reid's *Out Front*, using the Pure Direct mode with no subwoofer. On this recording, Reid's instrument has a rich and fat sound, but through the RX-A2040, there was a fine sense of clarity that made it easy to follow the melody of his bass line. Drummer Duduka Da Fonseca kind of goes wild at one point, but I was struck by how easy it was to hear the contrasts in tonal colors between the various cymbals in his kit. Overall, the tonal balance tended to fall very slightly on the warm and full side of neutral, but with a clarity in the upper midrange that allowed the various players to cut through when it was their turn in the spotlight.

To check out the Yamaha's abilities with hi-res music, I connected my laptop via the front-panel USB port to play 192-kilohertz/24-bit downloads from HDtracks.com of "Wood and Metal" and "War" from *Explorations in Space and Time* featuring Jamey Haddad, Lenny White, and Mark Sherman. These three renowned percussionists really let it rip, and the simple two-microphone recording from Chesky truly demonstrates what

real dynamics are. The first track features the quiet rustle of a rain stick and wood blocks, but this contrasts dramatically with the massive pounding of huge bass drums and gongs on "War." The RX-A2040 took these extreme dynamic demands in stride, allowing all of the tonal color and subtlety of each instrument and the recording space itself to shine through clearly.

Even with just two speakers playing, James Newton Howard's score for *After Earth* has the type of huge and enveloping sound that makes you wonder why we need surround sound at all. The movie may have been a flop, but this soundtrack is a winner in the epic-science-fiction-thriller model, with huge kettle drums, sweeping strings, and speaker-crushing dynamics. I played the opening track, "The History of Man," with peak volume levels at my listening seat reaching 104 decibels, and the RX-A2040 never broke a sweat. The dynamics didn't sound compressed in any way. The recording may have been artificially tweaked and poked in the studio to give it such a huge sound, but there's no denying the excitement it creates when played through a system with enough power to deliver the dynamic swings required.

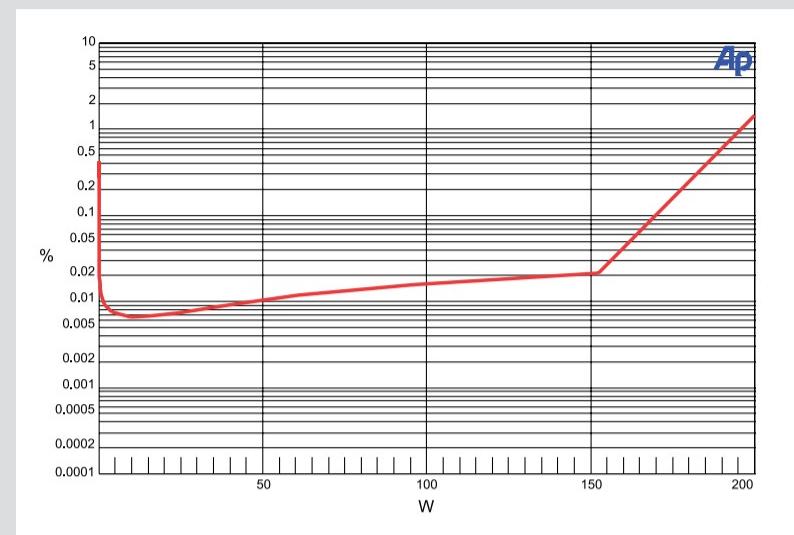
Next, I moved on to surround music with the Blu-ray of Peter Gabriel's *Back to Front: Live in London* and played "Red Rain." The sound here puts you right in the O2 Arena,



● The RX-A2040's additional central foot is designed to dampen chassis vibration.

Test Bench

Yamaha Aventage RX-A2040 A/V Receiver



AUDIO This graph shows the RX-A2040's left channel from Audio 4 input to speaker output with two channels driving 8-ohm loads. Measurements for THD+noise, crosstalk, signal-to-noise ratio, and analog/digital frequency response were all within expected performance parameters. Full details available at soundandvision.com.—MJP

	0.1% THD	1.0% THD
2 Channels Continuously Driven, 8-ohm Loads	169.7 watts	195.9 watts
2 Channels Continuously Driven, 4-ohm Loads	259.8 watts	317.1 watts
5 Channels Continuously Driven, 8-ohm Loads	46.9 watts	65.4 watts
7 Channels Continuously Driven, 8-ohm Loads	42.3 watts	63.1 watts

VIDEO The Yamaha passed all of our standard video tests. It was a fraction of a second later in locking onto 2:2 than the very best AVRs we've seen, but this was minor enough to not affect its rating.—TJN

SPECS

Power Output: 9 x 140 watts (8 ohms, 2 channels driven) • **Auto Setup/Room EQ:** YPAO Multi Point (proprietary) • **Video Processing:** 4K scaling/passthrough (proprietary) • **Dimensions (WxHxD, Inches):** 17.13 x 7.5 x 18.39 • **Weight (Pounds):** 37.5 • **Video Inputs:** HDMI 2.0 (8, 1 front panel), MHL-enabled HDMI (1 front panel), component video (3), composite video (5, 1 front panel) • **Audio Inputs:** Coaxial digital (3), optical digital (3), stereo analog (10, 1 front panel), phono (1), 7.1 channel (1) • **Additional:** USB (1 front panel), Ethernet (1), IR remote (2 in/2 out), AM (1), FM (1), Wi-Fi antenna • **Video Outputs:** HDMI 2.0 (2), component video (1), composite video (2) • **Audio Outputs:** Stereo analog (3; 2 Zone 2/3), 7.2-channel preout, 1/4-inch headphone (1) • **Additional:** RS-232 (1), low-voltage trigger (2)

- Yamaha's remote is pretty basic and lacks backlighting.



surrounded by Peter and the band. Gabriel's concerts usually involve a lot of different musicians, which could lead to a sense of dynamic congestion, but through the RX-A2040, even little details like the marimba, the triangle, and the cello player's bow on the strings cut through the mix clearly. As before, the overall sound was warm and enveloping, yet detailed without being overtly bright.

Home theaters are made for movies, so last but certainly not least, I ran the RX-A2040 through some of my favorite movie test material in surround, starting with the Blu-ray of *RED*. Near the opening, there's a scene where a SWAT team goes after Frank Moses (Bruce Willis) in his home, accompanied by a soundtrack that combines pumping, synthesized techno music with a seemingly endless stream of gunshots and explosions. Despite the dramatic dynamic impact of each shot, there was a sense of ease to the way the RX-A2040 presented everything, letting you hear the different timbre of the retorts from each weapon and the wood frame of the house it was firing through, rather than just a confusing cacophony of high-frequency sound. At one point, Moses drops some bullets into a heated frying pan, letting the stove set them off randomly to create a sonic distraction. Through the Yamaha and PSBs, the distraction became real,

with the sound of bullets whizzing everywhere around my room.

For some subtler movie effects, I put on the opening scene of *Source Code*, where Colter Stevens (Jake Gyllenhaal) is on a train, trying to figure out who he is. The clarity of the Yamaha's presentation revealed the care put into the sound mix, making small details easy to discern, such as the way the sound of the wheels clattering on the tracks under the train changes as Stevens moves from the main passenger car to the bathroom.

Dialogue clarity was always exceptional, even when the strings in the score swell up to envelope the soundstage. Of course, all hell breaks loose when the train explodes, but even then the resulting sound was powerful and authoritative, rather than just loud.

Conclusion

The Yamaha RX-A2040 gives you pretty much everything you would expect from a big, near-flagship receiver. It can handle music and movies from just about any type of format or source you can throw at it—and reproduce it all with a fine combination of warmth, clarity, and timbral transparency. The supplied remote is nothing to write home about, but I found it was easy to simply control the receiver with an iPad running Yamaha's iOS app.

The big elephant in the room, however, is that just like most other recent A/V receivers, the RX-A2040 can't handle the HDCP 2.2-protected Ultra HD signals that are slated to be coming down the pike soon. If UHD (4K) video isn't important to you, then this won't be a problem—but if it is, you eventually may need to find a way to route UHD video sources around the Yamaha while running a separate link for the audio. This caveat aside, the RX-A2040 needs no excuses, and it can kick butt in any top-notch setup.♦



- The RX-A2040 has HDMI 2.0 inputs and an Ultra HD scaler, but no HDCP 2.2.



ECLIPSE 7 IS 'TOP DOG'



READ & LISTEN

new

Cable Survey

from

stereoplay

14 Cables Tested

Download Comparative
Files & Listen for Yourself



tinyurl.com/q7t2y2n



Other cables filter your music.
Wireworld cables let the most music through.

Technology that channels musical expression.

© 2015 Wireworld, Inc.

DNA Helix U.S. Patent #8,569,627

www.wireworldcable.com

WIREWORLD®
CABLE TECHNOLOGY

Engineered for Reality™

Sphere and Now

By Mark Fleischmann

Morel SoundSpot MT-3 Speaker System

PRICE \$3,000
as reviewed

THE ADVENT OF DOLBY ATMOS casts a shadow over existing 5.1- and 7.1-channel surround systems. Some home theater buffs want the new technology and want it now, while others may decide not to go all in. In between are those wondering whether to leave the door open for Atmos. And that brings us to the Morel MT-3 satellite/subwoofer set. The 5.1-channel configuration reviewed here does not support Atmos; at least, these satellites lack the up-firing drivers that constitute an “Atmos-enabled” speaker system. However, their base provides for wall-, ceiling-, or tabletop positioning with no additional hardware, and surface-mounting an extra pair (or two) of satellites on a ceiling would indeed bring this speaker system into Atmos territory with a 5.1.2 (or, better yet, 5.1.4) configuration.

Craig Eggers of Dolby Labs offers a few stipulations: “Our guidance with regards to overheads is a design that is timbre-matched to the primary speakers.” Check that box—with identical speakers, timbre-matching is perfect. The ceiling speakers must be “capable of supporting the same power equivalent as the primaries.” Check again, for the same reason. They must have “a wide dispersion angle.” Check—these satellites aren’t beamy. And they should “support a wide frequency response.” Regarding the top end, my ears say yes, though wide isn’t the same thing as perfectly even; check our measurements. As for the bottom end, the bass cutoff for Atmos ceiling speakers is 180 hertz, within the limits of what these little satellites

AT A GLANCE

Plus

- 1mm-thick steel sphere
- Concentric drivers
- Superb imaging, sound-field

Minus

- Predictably modest bass
- Satellites pricey

will produce. There would have to be some bass management, of course, but any Atmos receiver would handle that.

So although the MT-3 isn’t billed as an Atmos-upgradable system, it could actually be one.

Music Theatre’s Secret Sauce

Morel is an Israeli manufacturer whose SoundSpot Theatre 2 Ultra sat/sub set won a coveted spot on our Top Picks list more than three years ago. The MT in MT-3 stands for Music Theatre, suggesting that these satellites and subwoofer are as good for music as for

movies. That’s a hurdle not all sat/sub sets can clear—but the best ones can.

The secret sauce of the SoundSpot SP-3 satellite, on which the MT-3 system is based, is the enclosure, a sliced sphere of matte-finished steel just 1 millimeter thick. Inside, the enclosure is deliberately bare of internal bracing or damping materials. “Damping absorbs energy, which has to be released somehow,” says Morel’s Nir Paz. “We find it distorts sound and inhibits transient response.”

Instead, the enclosure resonates along with the signal, but “when the music stops, the sphere stops, resulting in a much cleaner sound.” Other benefits of the spherical enclosure: It defeats the bass-bloating, sound-coloring standing waves that build up inside

rectangular enclosures. And it is structurally strong, a good thing for low frequencies. “It’s all about getting distortion of all kinds to their lowest levels,” says Paz.

Inside the metal ball is a 0.75-inch polymer-coated silk-dome tweeter mounted in the center of a 4-inch treated-paper cone woofer. This concentric design allows the drivers to operate as a single point source, which improves off-axis response consistency and allows the use of a simpler crossover design.

The metal “lotus” grille’s geometrically intriguing perforations—in addition to being beautiful in a quasi-psychedelic way—fine-tune the speaker’s output. Large holes at the woofer’s outer edge gradually fade down to smaller holes toward its inner edge. But then the holes suddenly enlarge in the area over the tweeter. Nir Paz claims that the pattern “reduces the reflective and cancellation effects of grilles. The different holes create a different resonance frequency, which



● The MT-3 system comprises five identical speakers for a timbre-matched soundstage.

RATING

Morel SoundSpot MT-3 Speaker System

Performance

Build Quality

Value



THE VERDICT

Morel's MT-3 Music Theatre combines steel truncated-sphere enclosures, concentric drivers, and a unique grille pattern to create a visually striking and high-performing compact sat/sub set.

SPEAKER SYSTEM

MOREL SOUNDSOTP MT-3 SPEAKER SYSTEM

PRICE: \$2,999 (SP-3, \$500 ea; SUB-8X, \$499)

Morel • (877) 667-3511 • morelhifi.com

cancels itself out." I'm not sure about that explanation, but the grilles are also tough, an advantage when certain household members explore the speakers with curious little fingers or large tails.

Morel provided two subwoofers for this review. The one I used for most of the demos—because it least resembles the sub in the last Morel system I reviewed—is the SUB-8X (\$499), with front-firing 8-inch treated-paper-cone woofer and 80-watt RMS amp (note that an RMS rating is more conservative than a peak rating). While its enclosure is a simple fabric-grilled rectangle, the SUB-8X does have a better look and feel than the utilitarian subs in most other sat/sub sets, with a beautiful gloss finish and rounded edges. Considering the price, this pushed up my ratings for build quality and value.

A more costly option would be the PSW150WR (previously known as the PSW8E, \$699). This wireless sub comes in a wheel-shaped composite resin enclosure, with a port molded into its rear side, and it houses a 7-inch treated-paper-cone driver backed with a 150-watt RMS amp. I spent a few evenings with this model at the end of the demos. More on that later.

Associated equipment included a Pioneer Elite VSX-53 A/V receiver, Oppo BDP-83SE universal disc player, Micro Seiki BL-21 turntable, Shure V15MxVR/N97XE cartridge, and the phono stage of a Denon



● The SUB-8X features an attractive white gloss finish.

RATING

Morel SUB-8X Subwoofer

Performance

Features

Ergonomics

Value

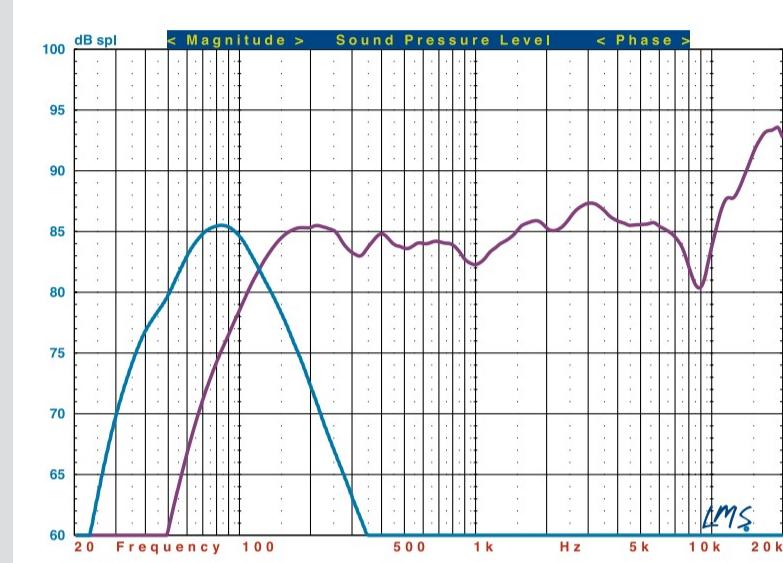
PRA-S10 preamp. All movie demos were on Blu-ray Disc with DTS-HD Master Audio soundtracks.

Facts on the Ground

Imaging and soundfield integrity are the strong suits of the SP-3 satellites. With a performance boost from their concentric driver arrays, they produced a vibrant soundfield with consistent timbre—all around and strongly imaged objects in every possible position and trajectory. Spellbinding would not be too strong a word. Tone and texture were equally vivid, even in two-channel mode, which called attention to the weaknesses of some content but benefitted

Test Bench

Morel SoundSpot MT-3 Speaker System



SP-3 (purple) +3.36/-3.63 dB, 200 Hz to 10 kHz; -3 dB @ 114 Hz, -6 dB @ 97 Hz; impedance minimum 4.54 ohms @ 99 Hz, phase angle +41.07° @ 179 Hz; sensitivity 84 dB, 500 Hz to 2 kHz.

SUB-8X (blue) Close-miked response, normalized to level @ 80 Hz: lower -3 dB @ 57 Hz, -6 dB @ 48 Hz, upper -3 dB @ 116 Hz with Freq control set to maximum.—MJP

SPECS

SP-3: 4 in treated-paper cone woofer, 0.75 in silk-dome tweeter; 6 x 7.75 x 5.5 in (WxHxD); 3.5 lb • **SUB-8X:** 8.27 in treated-paper cone woofer; 80 watts RMS; vented enclosure; line-level stereo in/out, speaker-level in/out; 12 x 13 x 12.25 in (WxHxD); 16.5 lb

most selections. Bass wasn't especially forceful, but I've come to expect that in compact sat/sub sets. (But note that of the two subwoofer options in this case, I chose the less powerful one.)

Neverland, the effects-laden Peter Pan prequel, gave the Morels a continuous stream of surround effects with just a moderate amount of bombast. Operating well within their dynamic envelope, the satellites impressed me with their wide-open soundfield, as they did with every subsequent piece of content. Dialogue was

clean and natural, quite intelligible, but without obvious enhancement. For this demo only, I tried both subs, and I found that the wheel-shaped PSW150WR had a bit more oomph—not a surprise, since it has twice the rated power. The wireless feature worked as soon as I plugged it in, with no further intervention.

The 2013 DTS Demo Disc offered greater dynamic challenges. The satellites gave a forceful account of the original *Hunger Games* in the scene where induced wildfire chases Katniss through the forest. *Snow White & the Huntsman* is the clip I use for the “does this hurt?” test, in the battle between Ms. White and the evil



● Each spherical enclosures houses a concentric tweeter-woofer complement.





● **Mark also tested out the wireless PSW150WR subwoofer.**



See soundandvision.com
for full lab results and technical definitions



stepmother. It did not hurt, though it was plentifully detailed, and the satellites guided movement through the soundfield precisely. *Battleship* gave the less powerful box-shaped SUB-8X a chance to raise hell. Instead, it raised heck, but a reasonable amount of heck for an 8-inch sub. The standout was the cave clip from *Prometheus*, which came alive with subterranean ambience and the fluttering echo of the explorers' electronic tools. The Morels loved picking apart the delicate timbres of effects and routing them around the room.

Movies I intended for mere break-in listening bore unexpected fruit and tested my appetite for irony. In *12 Years a Slave*, the matched satellites knitted together a seamless soundfield, which was most noticeable in the naturalistic insect noises that surrounded the 19th-century plantation exteriors—including scenes of horrific barbarism. A similar wraparound enriched a scene in *The Book Thief* that juxtaposed lovely choral music with WWII-era barbarism. In *August: Osage County*, the jaunty guitars of Eric Clapton's "Lay Down Sally" eventually became the ironic soundtrack for the Meryl Streep character's emotional meltdown. All of which gives me another chance to point out that the benefits of surround sound—yes, even old-fashioned 5.1—go beyond thundering, clattering, whiz-bang effects. Surround also enhances the less bombastic but more devastating scenes that tug at our hearts.

Yesterday and Today

I thought the LP and first-generation CD versions of the Grateful Dead's *Reckoning* would be sufficient for my library. How was I to know that Rhino would issue a double HDCD of the unplugged album with loads of previously unreleased tracks? It brings the acoustic guitars into finer

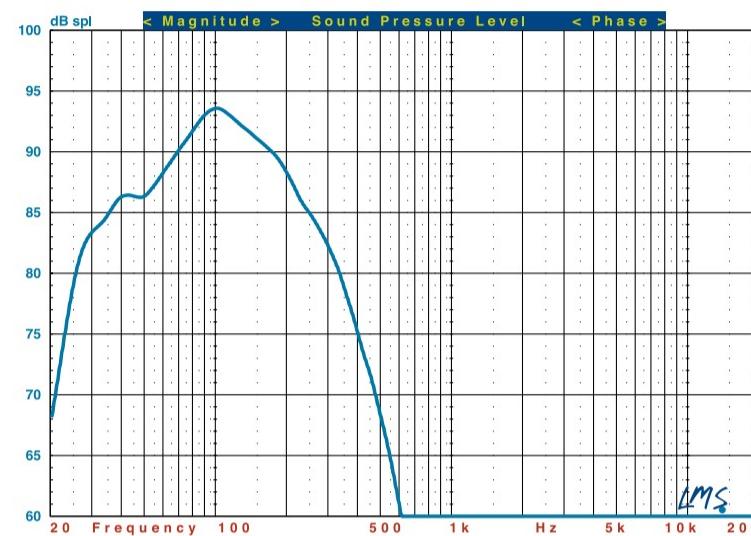
focus. Rather than vanish abruptly into blackness, notes linger a little longer. The Morels emphasized the transient pick-on-string bite and brought me forward to the front rows of Radio City Music Hall. Turns out steel balls and steel strings get along great.

An old CD of Brahms' Symphony No. 3, with Sir Georg Solti leading the Chicago Symphony Orchestra, is sitting on my desk. Its 1985 copyright date reminds me that the \$15 I paid for it would now be an inflation-adjusted \$32.92. When I contemplate how many other \$15 CDs I bought in those days...well, excuse me while I weep. This first-generation digitalia earned a place in my listening notes by accentuating how merciless the Morels could be to what is, by today's standards, an antiquated mastering job for a format that isn't considered "high-resolution." These satellites were incisive and analytical, not warm and forgiving, and they revealed this substandard treatment of the Chicago strings for what it was: crude and unsatisfying.

I feel better about my \$3 investment in Billy Cobham's third solo album, *Total Eclipse*, circa 1974: \$14.37 in today's dollars isn't too shabby compared with the cost of new vinyl now. The volcanic style Cobham developed for the Mahavishnu Orchestra, though still muscular on this record, had modulated to a funkier percolating undercurrent. The Morels delivered a scaled-down version of it—Cobham Lite—with the smaller sub's inherent limits. The Brecker brothers' sweet brass and John Abercrombie's crackling guitar brought out the best quality of the satellites: their treatment of complex textures, including the benign analog patina that overlay the whole thing via my vintage poor man's vinyl rig.

Test Bench

Morel PSW150WR (PSW8E) Subwoofer



Close-miked response, normalized to level @ 80 Hz: lower -3 dB @ 57 Hz, -6 dB @ 27 Hz, upper -3 dB @ 147 Hz with Freq control set to maximum.—MJP

SPECS 8.27 in cone woofer; 1500 watts RMS; vented enclosure; line-level stereo in/out; 16 x 13 x 9 in (WxD); 23 lb

Although I didn't use the PSW150WR subwoofer in most of the main demos, it did accompany me through both of the Blu-ray Discs of surround and stereo material in King Crimson's vast *Starless* box set (which also includes two DVD-As and 20 CDs). What it lacked in sheer force, this little sub made up for in cleanly pitched bass notes, easily extending down to the bottom string of John Wetton's aggressive, virtuoso bass playing—though Bill Bruford's mighty kick drum was inevitably understated. The manufacturer attributes the sub's bass purity to the solidity of the composite resin enclosure. If you're buying a Morel system, the PSW150WR is worth the extra couple of hundred bucks, especially if you need your sub to be wireless.

The Morel MT-3 is a superlative sub/sat set, with most of its special qualities residing in the satellites. It is not cheap, but if you're looking for speakers that not only are visually unintrusive but also might actually

make your room look classier, these have that magic power. Whether or not you eventually go for Atmos, the Morels offer several advanced design features that are rare elsewhere (such as the concentric drivers and spherical enclosures) or nonexistent (such as the lotus grilles). And yes, in their candid way, they do sound gorgeous. ♦

Audio editor Mark Fleischmann is also the author of the annually updated book *Practical Home Theater* (quietriverpress.com).



The Morel MT-3 is a superlative sub/sat set.

● **The SP-3's quietly classy look is visually unobtrusive.**

HARBOR FREIGHT

QUALITY TOOLS AT RIDICULOUSLY LOW PRICES

How Does Harbor Freight Sell GREAT QUALITY Tools at the LOWEST Prices?

We have invested millions of dollars in our own state-of-the-art quality test labs and millions more in our factories, so our tools will go toe-to-toe with the top professional brands. And we can sell them for a fraction of the price because we cut out the middle man and pass the savings on to you. It's just that simple! Come visit one of our 550 Stores Nationwide.

SUPER COUPON!



12" SLIDING COMPOUND DOUBLE-BEVEL MITER SAW WITH LASER GUIDE

NEW

CHICAGO ELECTRIC POWER TOOLS

LOT NO. 69684
61776/61969/61970

Item 69684 shown

SAVE \$165 **\$134.99**
REG. PRICE \$299.99

80083910

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

SUPER COUPON!



5 FT. 6" x 7 FT. 6"

ALL PURPOSE WEATHER RESISTANT TARP

LOT NO. 953/69136
69248/69128/69210

Item 953 shown

SAVE 61% **\$269**
REG. PRICE \$6.99

80092234

LIMIT 8 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

SUPER COUPON!



PACIFIC HYDROSTAR

1650 PSI PRESSURE WASHER

LOT NO. 69488
• 1.3 GPM

SAVE \$50 **\$79.99** REG. PRICE \$129.99

80098632

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

SUPER COUPON!



4-1/2" ANGLE GRINDER

drillmaster

LOT NO. 95578
69645/60625

Item 60625 shown

SAVE 50% **\$9.99**
REG. PRICE \$19.99

80105277

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

WOW SUPER COUPON!



SAVE OVER \$332 **US GENERAL PRO**

26" 16 DRAWER ROLLER CABINET

LOT NO. 67831/61609
Item 67831 shown

\$317.83 **\$369.99**
REG. PRICE \$649.99

80108C98

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

WOW SUPER COUPON!



TRIPLE BALL TRAILER HITCH

LOT NO. 94141
69874/61320
61913/61914
Item 94141 shown

SAVE 66% **\$19.99** **\$29.99**
REG. PRICE \$59.99

80086237

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

WOW SUPER COUPON!



PITTSBURGH AUTOMOTIVE

RAPID PUMP®

1.5 TON ALUMINUM RACING JACK

Item 68053 shown

LOT NO. 68053/69252
60569/62160/62496/62516

\$59.99 **\$80.99**
REG. PRICE \$119.99

80093567

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

SUPER COUPON!



NEW

900 PEAK/700 RUNNING WATTS 2 HP (63 CC) 2 CYCLE GAS RECREATIONAL GENERATOR

LOT NO. 60338/69381/62472
Item 69381 shown

SAVE \$80 **\$99.99**
REG. PRICE \$179.99

80100802

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

SUPER COUPON!



2.5 HP, 21 GALLON 125 PSI VERTICAL AIR COMPRESSOR

CENTRALPNEUMATIC

LOT NO. 67847
61454/61693
Item 67847 shown

SAVE \$70 **\$149.99**
REG. PRICE \$219.99

80101171

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

SUPER COUPON!



2500 LB. ELECTRIC WINCH WITH WIRELESS REMOTE CONTROL

Item 61840 shown

LOT NO. 68146
61258/61297/61840
BADLAND

SAVE \$100 **\$49.99**
REG. PRICE \$149.99

80104272

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

WOW SUPER COUPON!



SAVE 66% **YOUR CHOICE!**

\$9.99 **\$21.99**
REG. PRICE \$29.99

Item 239 shown

TORQUE WRENCHES

PITTSBURGH PRO

"Impressive Accuracy. Amazing Value" - Car Craft Magazine

1/4" DRIVE LOT NO. 2696/61277
3/8" DRIVE LOT NO. 807/61276
1/2" DRIVE LOT NO. 239/62431

80090065

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

SUPER COUPON!



10 FT. x 20 FT. PORTABLE CAR CANOPY

LOT NO. 69034/60728
Item 69034 shown

SAVE \$100 **\$99.99**
REG. PRICE \$199.99

80097468

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 8/3/15. Limit one coupon per customer per day.

- 100% Satisfaction Guaranteed
- Over 25 Million Satisfied Customers

- No Hassle Return Policy
- Lifetime Warranty on All Hand Tools

- 550 Stores Nationwide
- HarborFreight.com 800-423-2567

Entertainment

Reviews in High Definition



BLU-RAY

Guardians of the Galaxy



Disney

Groot for the Underdogs



Exploring the adventures of a lesser-known team from the Marvel Universe, *Guardians of the Galaxy* was something of a surprise hit. The plot is well worn, almost clichéd, as a group of disparate beings learn to work together, and we can spot the few twists light-years away. Perhaps the filmmakers are acknowledging all that has come before but have chosen to enliven this tale by infusing a vast quantity of smart-ass humor. And that decision pays off remarkably well, yielding one of the most entertaining space operas since *Star Wars*.

An Earthling of mysterious origin, Peter Quill, aka Star-Lord (Chris Pratt), is a career criminal, but his latest score—a jewel of devastating power—attracts the attention of the widely despised warrior Gamora (Zoe Saldana), daughter of the supremely evil Thanos. Before long, bounty hunters Rocket and Groot, voiced respectively by Bradley Cooper and Vin Diesel playing a scientifically enhanced raccoon and a walking tree, are on their trail, and soon this quartet is breaking out of a maximum-security prison together, joined by the vengeful, muscle-bound Drax (Dave Bautista). These very different personalities



BLU-RAY
STUDIO: Disney, 2014
ASPECT RATIO: 2.40:1
AUDIO FORMAT: DTS-HD Master Audio 7.1
LENGTH: 121 mins.
MPAA RATING: PG-13
DIRECTOR: James Gunn
STARRING: Chris Pratt, Zoe Saldana, Dave Bautista

PICTURE ★★★★★
SOUND ★★★★★
EXTRAS ★★★★★

are brought to life by some extremely talented actors, and so much of the charm of *Guardians* is born of their electric interplay. But time is running out for them to prevent a fundamentalist member of the imposing Kree race from destroying the entire planet of his enemy, despite a recent treaty. It's fast-paced and action packed, if not especially memorable after the end credits.

The movie is executed on a truly grand scale, as almost nothing here is set in our mundane reality. Instead, we visit some big, beautiful worlds—and some big, ugly worlds, too—full of strange creatures and advanced technology. The elaborate, ubiquitous special effects are stunning, rife as they are with fine nuance, none of which seems to be lost in this outstanding 2.4:1 Blu-ray presentation. Brightly

RATINGS

Poor Fair Good Excellent

PICTURE	★	★★	★★★	★★★★	★★★★★
3D-NESS	★	★★	★★★	★★★★	★★★★★
SOUND	★	★★	★★★	★★★★	★★★★★
EXTRAS	★	★★	★★★	★★★★	★★★★★

hued digital overlays are frequently employed as a storytelling tool, always with pleasing, credible sharpness. Color is used inventively throughout, as when Gamora's green skin is boldly contrasted against her red leather outfit. Villainous Ronan seems forever surrounded by darkness, and these scenes are admirably clear and stable. A converted Blu-ray 3D version of this title is also available.

The DTS-HD Master Audio 7.1 accompaniment is likewise exemplary. The ".1" is generously portioned and wonderfully evident throughout: in the mighty spaceship engines, fierce explosions, and a particularly epic crash. That bass is also counterbalanced by clean highs, as in the bright zing of energy blasts during a dogfight. The surround channels are seamlessly integrated, not solely for the enormous action sequences but the ample, thoughtful atmospheric fill that keeps the whole movie sonically alive and vibrant. Quill's prized possession is a first-generation Walkman loaded with '70s favorites, and it's a hoot to hear these gems in the room-filling, high-resolution soundtrack, alongside Tyler Bates' original score.

Director/co-writer James Gunn's audio commentary offers helpful backstory in addition to production nitty-gritty. He returns for the dense behind-the-scenes "Guide to the Galaxy," while another featurette focuses on the CGI Groot and Rocket. A gag reel and five deleted/extended scenes—in various states of completion, with optional commentary—are also included. And a preview of *Avengers: Age of Ultron*, reminds us that the Marvel Cinematic Universe remains a sprawling work in progress. • **Chris Chiarella**

BLU-RAY 3DS



TEENAGE MUTANT NINJA TURTLES THE MAGIC IS BACK

Paramount

► Way back in the mid to late 1980s, I was an avid comic book collector, and one of my favorite discoveries around that time was a brand-new and independently produced comic called *Teenage Mutant Ninja Turtles*. It lacked the polish and grandeur of the Marvel and DC titles, but it was raw, edgy, and totally original. There was no shortage of blood on the katana, if you get my drift. Not long after that, however, mainstream pop culture bastardized it into a puke-inducing kiddie cartoon and toy franchise. The once-hardcore vigilante turtles suddenly became pizza-eating wisecrackers who over-frequently used words like *dude* and *cowabunga*. It also spawned three diaper-filling live-action films, and I abandoned all hope after that.

Now, decades later, the Ninja Turtles are back to reclaim some of their original glory. This latest film wisely replaces four actors in rubber suits with motion-capture computer graphics and infuses some much-needed hardcore ass-kicking to offset the juvenile humor. Their unique personalities are still intact—the leader, the hothead, the brain, and the smart-ass—and their interpersonal banter has never been better.

The 3D is some of the best I've seen yet. The visual clarity and depth of field are first rate, with no strobing, halos, or ghosting effects. Projectiles, debris, and weaponry fly out at you with impressive verve and maintain foreground focus in perfect juxtaposition with the background elements, even when the action is at its most frenetic. The sequence that best showcases this is the snowy mountain avalanche chase. I watched it four times. The 2D version is aces, too. Picture clarity and contrast are consistently sharp, while colors and textures are strikingly vivid.

For those not yet equipped for Dolby Atmos, the soundtrack will defer to the equivalent of 7.1 Dolby TrueHD lossless audio. Explosions, gunfire, kicks, punches, and all sorts of amped-up chaos come at you from all directions in a superlative mix. Center-channel dialogue is also strong and never gets overwhelmed by the sound effects and hard-hitting score.

Extras include numerous featurettes, an extended ending, and a music video. They lose a point for not including the theatrical trailers. DVD and Digital Copy included.

Yes, the action is ludicrously implausible, and the plot is loaded with preposterous contrivances. The humor still panders to the kiddies a little more than I care for, but despite all of that, I really dug this movie.

● **Corey Gunnestad**



BLU-RAY 3D
STUDIO: Paramount, 2014
ASPECT RATIO: 2.40:1
AUDIO FORMAT: Dolby Atmos
LENGTH: 101 mins.
MPAA RATING: PG-13
DIRECTOR: Jonathan Liebesman
STARRING: Megan Fox, Will Arnett, William Fichtner

PICTURE ★★★★★
3D-NESS ★★★★★
SOUND ★★★★★
EXTRAS ★★★★★



THE MAZE RUNNER WHO MOVED MY CHEESE?

20th Century Fox

► Thomas is disjointed and confused as he wakes up on a rising elevator not knowing who or where he is. When he finally regains his focus, he's surrounded by a group of teenage boys and realizes he's not in Kansas anymore. He's in the Glade, an enclave surrounded by giant walls that hide a maze, a mostly off-limits area that's protected by the Grievers—cybernetic organisms that come out at night and will kill anyone who has ventured into the maze and hasn't exited when the sun goes down.

Thomas is initially accepted into the group with open arms, but his inquisitive nature about the maze and where they came from has many of the boys worried that he'll upset the social order—and they're right.

Teen literature and comic book adaptations are fuelling the copycat world of Hollywood these days. *The Maze Runner*—at least initially—is not a clone of *The Hunger Games* or *Divergent* in that the hero's confidence and leadership ability are on display from virtually the first scene. Also, given the way the story unfolds, you're just as confused as Thomas is about the situation since there's no lead-up to the events of the story: You're thrown right into the fire along with the hero.

The digitally shot production translates well to Blu-ray with a sharp, clean image. It features a ton of CG work that blends naturally with the on-location shoots. Daytime shots are full of color and depth, and the close-ups really shine in this environment. Nighttime sequences are a tad dark, resulting in some crushed shadow detail. Although I was pleased with the video encode, I was supremely impressed by the DTS-HD Master Audio track, which is one of the best 7.1-channel tracks I've heard to date. The surround envelopment places sounds all throughout the room—even above you—without relying on Dolby Atmos. Dialogue is always intelligible, and the bass response is top-notch.

The supplement package dives into the making of the film with a comprehensive behind-the-scenes look at casting, production, and visual effects that will likely have budding filmmakers on the edge of their seats.

The story elements are hardly original, but the casting is well done, and the direction by Wes Ball gets the most out of the young cast and keeps the pacing brisk. The cliffhanger ending may leave some feeling ripped off, but the sequel comes out this year, so you won't have to wait long to find out what's up next for Thomas. Recommended. ● **David Vaughn**



BLU-RAY
STUDIO: 20th Century Fox
ASPECT RATIO: 2.40:1
AUDIO FORMAT: DTS-HD Master Audio 7.1
LENGTH: 113 mins.
MPAA RATING: PG-13
DIRECTOR: Wes Ball
STARRING: Dylan O'Brien, Will Poulter, Kaya Scodelario

PICTURE ★★★★★
SOUND ★★★★★
EXTRAS ★★★★★





THE EQUALIZER GOTTA BE WHO YOU ARE

Sony Pictures

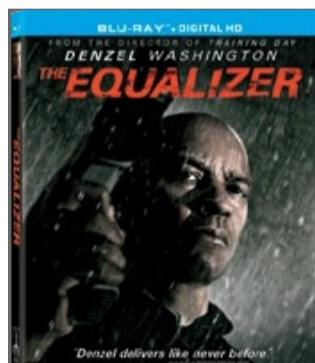


Like a big, wet, dumb, dopey dog jumping all over you, *The Equalizer* hits with home theater power that thumps you in the chest if not the heart. An ex-CIA operative has taken on a new identity, living in obscurity, working in a Home Depot, helping people with their self-esteem issues whenever he can, whether they need to lose weight, get an education, or stop being a corrupt cop. However, when faced with a teenager's plight of enslavement by brutal sex traffickers, he's forced back into using his main skillset—terminating roomfuls of bad guys with extreme swiftness and minimal prejudice.

Initially, in the first half hour of uneventful character development, we're presented with dismal, dim rooms, gloomy apartments, and Edward Hopper-like coffee houses. Later, the once quiet-spoken, simple-living Denzel Washington goes into deadly Bourne-style fight mode in a Russian mobster's restaurant. A more comic-book look takes over, the lighting striking, while plentiful detail, differentiation of elements, and sharpness emerge so you can even see follicles on Denzel's shaved head. Bland colors become rich, blacks go from muddy to matte, and whites become bright.

One kick-ass action sequence assembling all elements of recent impressive movie mayhem is set in the starkly lit semi-darkness of a Home Depot with our antihero weaponizing the store's inventory of tools to drill, immolate, and nail-gun every mother henchman. Simultaneously on the 7.1-channel soundtrack, sprinklers spray down on you, while bullets and shell casings bounce around your head from rears to surrounds, accompanied by blaring guitars, electronica, and piano, drums pounding up front. The initially subtle classical music goes deep rock with rumbling instruments nicely placed in each channel. Effects are immensely convincing. All effects and music are continuously used to build tension and menace before the violence escalates.

The extras' "Vengeance Mode" lets you watch the film with very occasional but interesting footage of stars and director commenting on the scenes and characters. Several short, lightweight featurettes include a look at the Equalizer character, fight choreography, a piece adoring Washington's generosity and professionalism, and an equally worshipful tribute to director Antoine Fuqua. ● Josef Krebs



BLU-RAY
STUDIO: Sony Pictures, 2014
ASPECT RATIO: 2.40:1
AUDIO FORMAT: DTS-HD Master Audio 7.1
LENGTH: 132 mins.
MPAA RATING: R
DIRECTOR: Antoine Fuqua
STARRING: Denzel Washington, Marton Csokas, Bill Pullman

PICTURE	★★★★★
SOUND	★★★★★
EXTRAS	★★★★★



THIS IS WHERE I LEAVE YOU THE BIG CHILL GOES KOSHER

Warner Bros.



Judd Altman (Jason Bateman) thinks his life can't get any worse—he's suddenly lost his wife, his job, his best friend, and his apartment—when his sister Wendy (Tina Fey) calls to tell him he's also lost his father, whose dying wish was for the family to reunite and sit shiva for seven days. Crammed into the family's suburban New York home with his embarrassingly blunt mother and dysfunctional siblings, Judd must confront an uncertain future, not to mention a bunch of "broken" friends and a pair of childhood flames. The result is a sensitive reflection upon lost youth and approaching middle age—and some of the funniest movie moments of 2014.

Although director Shawn Levy insists it was "made on a shoestring," this film's production values are outstanding. Video quality is almost beyond criticism. Fine details of fabrics, skin, hair, and fixtures from the Long Island home in which interior shots were actually filmed are cannily captured. Whites possess an addictive purity and depth. Though fleshtones occasionally betray a reddish hue, the film's color palette is otherwise restrained and supremely natural. Black levels fall short of reference quality, but not by much, and shadow detail is lovingly layered, enabling the interplay of light and shadow to form a ravishing tapestry. Edge enhancement is barely noticeable and never obtrusive.

Audio, particularly the shriek of baby brother Phillip's (Adam Driver) Porsche, is admirably realistic, possessed of natural tone and powerful dynamics. Music, including some upbeat '80s classics, is subtly blended into the mix, adding depth to dramatic and comedic moments alike.

Dialogue is exemplary, replete with the sort of minute details that blur the line between recording and reality. The only real criticism that can be leveled here is that, bereft of action scenes and special effects, the subwoofers loaf along, and the surrounds are rarely taxed.

There's also much to love with the Blu-ray's wealth of extras. There's a host of deleted scenes, all of which are of stellar quality. A full-length commentary and a separate short-subject documentary by Levy and writer/producer Jonathan Tropper offer a wealth of information. A touching tale of anger, fear, and healing, *This Is Where I Leave You* teaches us to embrace sorrow and laugh at life... a genuine mitzvah! ● Anthony Chiarella



BLU-RAY
STUDIO: Warner Bros., 2014
ASPECT RATIO: 2.40:1
AUDIO FORMAT: DTS-HD Master Audio 5.1
LENGTH: 103 mins.
MPAA RATING: R
DIRECTOR: Shawn Levy
STARRING: Jason Bateman, Tina Fey, Jane Fonda

PICTURE	★★★★★
SOUND	★★★★★
EXTRAS	★★★★★



THE PALM BEACH STORY

QUINTESSENTIAL SCREWBALL

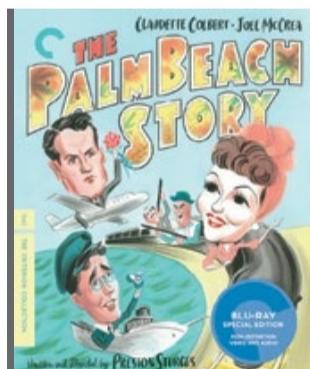
Criterion Collection

Preston Sturges, whose rise and fall were as sudden and steep as any in cinema (except for that of Orson Welles), had his peak years from 1940–44, writing and directing seven of the greatest American film comedies ever, and *The Palm Beach Story* sprung forth in precisely the middle of the run. A head-spinning romp through the joys and foibles of love, marriage, money, and class, it practically defines “screwball comedy,” with its Alpine plot twists, nonstop mayhem, rapid-fire dialogue, razor-sharp wit, and madcap but extremely good-natured characters. The cast is a wonder: Sturges-favorite Joel McCrea as a befuddled scientist, Claudette Colbert as his frankly avaricious wife, Rudy Vallee as an insouciant millionaire, Mary Astor as his gallivanting sister, Robert Dudley as a deaf, rich romantic coot (“the Wienie King”), and a dozen others. There’s not a moment’s pause, the prologue is perplexing, the ending pulls an O. Henry *deus ex machina* from the sky, but it’s so wild, woolly, and funny, you don’t mind: In fact, it’s wilder and funnier on their account.

Criterion’s 1080p transfer came from a restored 4K scan of a 35mm nitrate fine-grain or, for some scenes, a safety duplicate negative. The audio was remastered in 24 bits from the 35mm magnetic soundtrack. The picture’s not exactly eye candy (and was never meant to be), but it’s completely natural, with fine shadow detail, dark blacks, and wide contrasts, looking way more modern than its 72-year-old provenance. Ditto for the sound: nothing stunning, but very clear, which is all you want in a film heavy with dialogue.

The special-features highlight is a short talk with comic actor Bill Hader, explaining what makes Sturges so wondrous. A slightly longer talk by historian James Harvey is interesting, though dry. The booklet essay by *Village Voice* film critic Stephanie Zacharek gets Sturges right, in substance and tone. A fuller view can be found in the special features on Criterion’s DVD of Sturges’ masterpiece *Sullivan’s Travels*, including an hour-long documentary, an audio commentary track, an archival interview with Sturges, and a more contemporary conversation with his widow.

• Fred Kaplan



BLU-RAY
STUDIO: Criterion Collection, 1942
ASPECT RATIO: 1.37:1
AUDIO FORMAT: 24-bit monaural
LENGTH: 88 mins.
MPAA RATING: Unrated
DIRECTOR: Preston Sturges
STARRING: Claudette Colbert, Joel McCrea, Rudy Vallee

PICTURE ★★★★
SOUND ★★★★
EXTRAS ★★★★



GET ON UP

I FEEL GOOD FOR THE GODFATHER OF SOUL

Universal

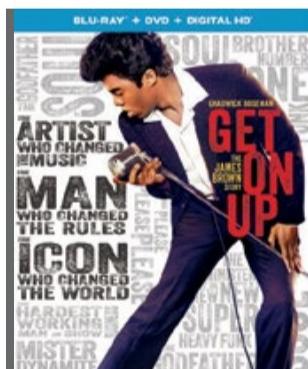
By their very nature, biopics are a mixed bag. On the one hand, they tell the story of a person in the limelight with achievements viewers are familiar with, while on the other, they explore sides of the person that have typically escaped the public eye. Striking the right balance between the two is the key. *Get on Up* takes a look at the life of James Brown, the Godfather of Soul, a man whose musical legacy can be heard and felt in almost every bit of popular music today. The film jumps liberally between different periods of Brown’s life in anecdotal form, covering his childhood, his meteoric rise to stardom, the fall, the comeback, and everything in between. While it feels a bit disjointed at times, the film nonetheless manages to draw a portrait of Brown and what drove him to become one of the most recognizable names in music.

The beauty of musical biopics is that they typically include a lot of concert footage, replete with colorful and dynamic stage lighting, and *Get on Up* offers prime eye candy during those moments. Combined with Chadwick Boseman’s energetic re-creation of Brown’s onstage persona, they are pure gold. Powerful colors never bleed, and the transfer is incredibly detailed.

In contrast, sequences of Brown’s childhood, the character behind the stage, as well as his personal affairs and struggles all display a beautiful color palette that instantly conjures up a sense of nostalgia. It perfectly balances the movie, as it attempts to draw a cinematic portrait of a legend, and the 1.85:1 widescreen presentation continues to impress with incredible richness and detail throughout.

The glamour of Brown’s showmanship is, naturally, complemented by his inimitable shuffles and grooves. For that purpose, the release dishes out a DTS-HD Master Audio 5.1 track, bringing Brown’s sonic fireworks to your living room like you’ve never heard them before. Impeccably remixed and remastered, these musical numbers will invariably make your feet tap. Subtle ambience and strong directional effects also distinguish this track, breathing life into every scene.

If you feel the movie’s plot distracts from the core of the film—Brown’s legendary music—fear not: The Blu-ray extras include full song performances for us to enjoy, along with an audio commentary from director/producer Tate Taylor and a handful of deleted scenes. • Guido Henkel



BLU-RAY
STUDIO: Universal, 2014
ASPECT RATIO: 1.85:1
AUDIO FORMAT: DTS-HD Master Audio 5.1
LENGTH: 139 mins.
MPAA RATING: PG-13
DIRECTOR: Tate Taylor
STARRING: Chadwick Boseman, Nelsan Ellis, Viola Davis

PICTURE ★★★★
SOUND ★★★★
EXTRAS ★★★★

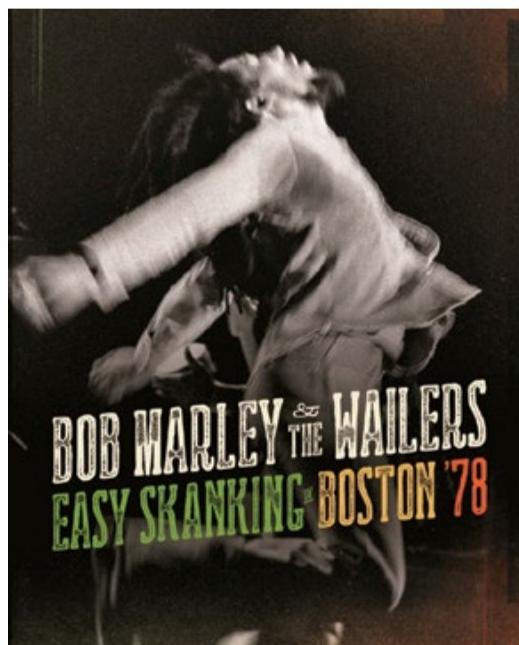


LEGEND—30TH ANNIVERSARY DELUXE EDITION/EASY SKANKING IN BOSTON '78 BOB MARLEY & THE WAILERS



Ahhh, reggae. What is also known as Jamaican dance music has become nothing less than an international phenomenon, thanks in no small part to the pioneering sounds of Bob Marley, who would have been 70 this year. (Marley died of cancer at the relatively young age of 36 in 1981.) Calling Marley the king of reggae is a bit like saying 4K Ultra HD looks fantastic—it's a fairly obvious statement, but no less profound. The seminal '60s and '70s work of Bob Marley & The Wailers literally defined a music genre that continues to engage people the world over—in fact, it may be the most universal music there is. British heritage artists like Eric Clapton and The Rolling Stones incorporated reggae's core spirit into their own rock offerings as soon as they heard it, while others like The Clash, Steel Pulse, UB40, and Matisyahu have fused the form with their own sounds to encapsulate and propel further rastaman variations like dancehall, dub, drum and bass, and hip-hop.

Why does reggae appeal to so many collective ears? The mystique lies in the very makeup of the genre's hypnotic, offbeat 4/4 rhythm, which evolved out of the faster tempos of its predecessors, ska and rocksteady. Reggae's signature staccato guitar lines, known as the skank, all riff on the offbeat—i.e., beats 2 and 4—and they're often supported by staccato piano and/or synthesizer. Drumming centers on the backbeat and especially beat 3, with the snare tuned high like a timbale and the drum fills usually ending without any cymbal crashes. The syncopated, melodic bass lines are thick and heavy, with the lower frequencies emphasized the most—a low-end lover's dream. Add in call-and-response vocals and passionate lyrics born of both a personal and political nature, and there you



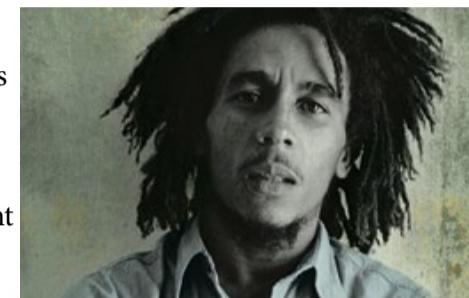
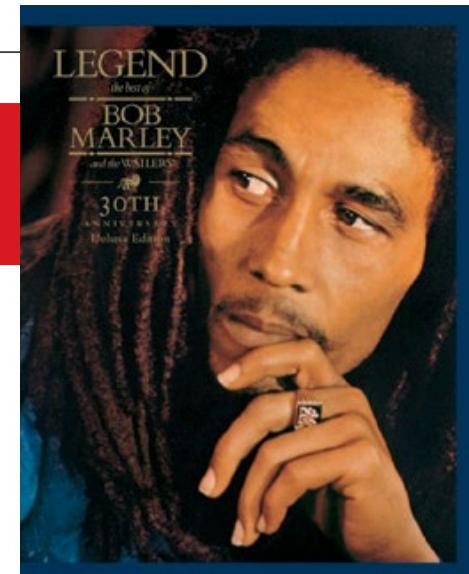
have all the elements of reggae's perpetually magical, engaging sound. Yeah, mon!

Marley's own, well, legend was sealed with the posthumous 1984 release of the greatest-hits compilation *Legend*, which has sold 15 million copies in the U.S. alone. The two-disc 30th anniversary Deluxe Edition has all 16 tracks on both CD and Blu-ray, and the latter disc contains two alternate takes and a masterful 5.1 mix done by surround maven Bob Clearmountain. Clearmountain gives the seemingly indelible reggae blueprint even more depth, putting the listener right in the middle of the haze, er, mix from the get go. On "Is This Love," Marley's vocal is front and center, while the back channels teem with cowbell in the rear left and other percussion in the rear right. Guitar lines skank on from the front left, and oh, how that low-end riddim just pounds from the sub channel. "Redemption Song" is properly stark, with just the right delay and echo on Marley's heartfelt vocals and the accompanying acoustic guitar. "Jamming" is exactly that, with wah-infused guitar wailing in the rear right and the all-female I-Three background-vocal mesh taking turns both caressing Marley's leads in the fronts and then responding accordingly in the back. *Legend* in 5.1 more than amply lives up to its name.

In celebration of Marley's 70th birthday, Universal will be rolling out a series of archival releases throughout the year, commencing with *Easy Skanking in Boston '78*. "The Heathen" and "Rebel Music" are emblematic of the show's overall inspirational vibe, which culminates in a downright spiritually uplifting reading of "Exodus," featuring a red-shirted Marley exhorting, "Set the captives free!" with plentiful support from The Wailers and I-Three. Just half of the show appears on the Blu-ray, with new video elements courtesy the 577 animation team (Bruno Mars, Pearl Jam) and material shot by a fan with a handheld camera sitting in front of the stage, both supplementing the official footage.

If you can't wait for the next archival installment, be sure to pick up *Uprising Live!* (EagleVision/Universal), a two-CD/one-DVD set that chronicles Marley's spellbinding appearance on the German TV series *Rockpalast*, recorded during his June 13, 1980 performance at Dortmund's Westfalenhalle venue. Telling in both tone and title, "Natural Mystic" defines how to catapult listeners and viewers alike directly into the essence of Marley's aural elixir, less than a year before he passed.

Sorry to have to be Captain Obvious again, but it's fair to say reggae music becomes more ubiquitous with each tick of the clock, largely thanks to Marley's abject mastery of the form. I hope you like jamming too, so get up, stand up for your high-resolution reggae rights. • **Mike Mettler**



Dennis Morris

BLU-RAY & CD

LABEL: Tuff Gong/Island/UMe
AUDIO FORMATS: 96-kHz/24-bit DTS-HD Master Audio 5.1 and Dolby TrueHD 5.1 (Blu-ray), 44.1-kHz/16-bit PCM Stereo (CD and Blu-ray)

NUMBER OF TRACKS: 32 (*Legend*), 20 (*Easy Skanking* – 13 on 1 CD, 7 on 1 Blu-ray)
LENGTH: 2:20:06 (*Legend*), 2:01:17 (*Easy Skanking*)

PRODUCERS: Bob Marley & The Wailers, Steve Smith, Chris Blackwell, Errol Brown, Lee Perry (*Legend* stereo mixes), Bob Clearmountain, Ziggy Marley, Jaime Feldman (*Legend* multichannel mixes), Ziggy Marley, Cedella Marley, Jaime Feldman, Matt Solodky (*Easy Skanking*)
ENGINEERS: Sergio Reulas Jr. (*Legend*), Robert Vosgien (*Easy Skanking*)

LEGEND
PERFORMANCE ★★★★☆
SOUND ★★★★☆
EASY SHANKING
PERFORMANCE ★★★★☆
SOUND ★★★★☆



PAGE# **MANUFACTURERS**

16... Acoustic Sounds

acousticsounds.com
superhirez.com

17... Audio Plus

Services
(800) 663-9352
audiopluservices.com

26... AudioQuest

(949) 585-0111
audioquest.com

13... Audioengine

audioengineusa.com

73... AV Science

(877) 823-4452

49... Bowers & Wilkins

bwspeakers.com

11... Bello

International
Corp.
(732) 972-1333
bello.com

27... Celsius Sound

celsius-sound.com

43... Channel D

(609) 818-0700
channld.com

27... CinemaShop

(866) 243-1001
cinemashop.com

14... Crutchfield

(800) 555-8347

C2-3,5 Definitive

Technology
(410) 363-7148
definitivetech.com

73... Diamond Case

Designs
(800) 616-5354
diamondcase.com

31... Elite

(604) 575-8310
elitehts.com

29... Emotiva Audio

Corporation
(877) 366-8324
emotiva.com

PAGE# **MANUFACTURERS**

8,9, GoldenEar

10,C4 Technology
(410) 998-9134
goldenear.com

67... Harbor Freight

Tools
(800) 432-2567
harborfreight.com

45... HSU

(800) 554-0150
hsuresearch.com

33... Music Direct

(800) 449-8333
musicdirect.com

57... Needle Doctor

(800) 229-0644
needledoctor.com

27... NuPrime Audio

nuprimeaudio.com

53... Oppo Digital,

Inc.
(650) 961-1118
oppodigital.com

C3... Polk Audio

(410) 764-5275
polkaudio.com

7.... ReVox

(519) 745-1158
tcgroup.tc/ReVox

12... RSL Speakers

(800) 905-5485
rslspeakers.com

40... SVS

(877) 626-5623
svsound.com

7.... Tannoy

tannoy.com

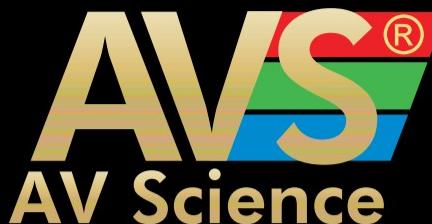
63... WireWorld

Cable
Technology
(954) 474-4464

15... ZVOX Audio

(866) FOR-ZVOX
zvoxaudio.com

**The Gear You Want,
From The Name You Trust!**



Call us for great pricing on:



- **Projectors**
- **Screens**
- **Electronics**
- **Speakers**
- **Lamps**

1-877-823-4452

sales@avscience.com

1255 University Ave
Suite 130
Rochester, NY 14607



Made To Order

TV LIFTS



Smooth and Quiet



Made in the USA!



**Conceal ANY TV up to 65"
Optional Swivel Action**

5 YEAR WARRANTY!

**Perfect for a home theater,
the foot of a bed, or
as a room divider.**

www.diamondcase.com

800-616-5354

**DIAMOND CASE
DESIGNS, INC.**



**Experts in Home Theater Furniture
655 N. Shepard St., Anaheim, CA 92806**

soundandvision.com

Information listed in this index is done so as a courtesy. Publisher is not liable for incorrect information or excluded listings. Advertisers should contact their sales representative to correct or update listing.

SOUND & VISION

SHOWCASE

**Advertise in our
Showcase Classified
section today!**

Contact

Laura LoVecchio
(718) 745-5025

or

laura_lovecchio@sbcglobal.net



TV as Sculpture?

Samsung S9W Ultra HDTV



I tried to imagine the S9W at home but quickly realized my rustic family room is no match for its art-gallery vibe. Although I have to admit, when I first laid eyes on its magnificent 82-inch Ultra HD screen with its cinematic 21:9 aspect ratio, I wondered why it was perched, just shy of teetering, on a compact refrigerator. Refreshments at hand, perhaps? No, that wasn't it. (Not even close, knucklehead.)

The design aesthetic is the product of Samsung's collaboration with renowned industrial designer Yves Behar, founder of fuseproject.com, who described his inspiration in a recent blog. "We have admired paintings displayed on walls for centuries, but an image on a curve instantly becomes a sculpture. The curved arc rests upon a gallery-like cube, reminding us of a classical sculpture on a plinth." (What do I know.) Actually, the screen is suspended above the base, creating the impression that it is floating in thin air.

But the cube has a more mundane purpose as well: It's a place to stash associated electronics—including a subwoofer and a motorized swiveling mechanism—which enables the screen to be as thin as possible. It also sets the stage for a little magic. When you turn on the TV, the screen pivots toward the viewer and the top of the cube rises, revealing an inner light and giving the woofer room to breathe. "We constantly look for touches of the unexpected: moments, details, materials that add an element of surprise," Behar explained.

Of course, the S9W is about more than just artful design—it makes a bold technology statement, too. The ultra-wide screen is a perfect fit for

Samsung • (855) 726-8721 • samsung.com

2.35:1 movies and features a dramatic "4200R" curvature, intended to provide an optimal experience for viewers sitting 10 to 13 feet from the screen. A "panorama extension algorithm" judiciously stretches 16:9 content for an extended image that's said to look more natural than the funhouse stretch modes you get with some TVs.

The S9W is built around Samsung's new flagship "SUHD" platform, which uses nanocrystal (quantum dot) backlighting to provide "twice the color adjustment points and 64 times more color expression than conventional TVs." SUHD models also incorporate high dynamic range technology, which makes images look more lifelike by significantly boosting peak brightness with specially encoded content (which is not yet available). Samsung is working with 20th Century Fox and Netflix to bring such content to market later this year (not to be confused with Warner Bros.' plan to release movies with Dolby Vision encoding).

Pricing was not available as of this writing, but delivery is imminent (spring). To give you an idea of the ballpark we're playing in, the 105-inch S9 model Samsung introduced last year goes for a cool \$120k.—Bob Ankosko



Sound & Vision (ISSN 1537-5838) (USPS 504-850) May 2015, Vol. 80, No. 4. COPYRIGHT 2015 BY TEN: The Enthusiast Network Magazines, LLC; Published 10 times a year (January, February/March, April, May, June, July/August, September, October, November, December) by TEN: The Enthusiast Network, LLC., 261 Madison Avenue, 6th Floor, New York, NY 10016-2303. Periodicals postage paid at New York, NY and additional mailing offices. Single copy price is \$5.99. **Subscriptions:** U.S., APO, FPO, and U.S. Possessions \$23.94 for 10 issues. Canadian orders add \$10.00 per year and international orders add \$20.00 per year (for surface mail postage). Payment in advance, U.S. funds only. **POSTMASTER:** Send all UAA to CFS. (See DMM 7074.12.5); **NON-POSTAL AND MILITARY FACILITIES:** send address corrections to Sound & Vision, P.O. Box 420235, Palm Coast, FL 32142-0235. **Mailing Lists:** Occasionally, our subscriber list is made available to reputable firms offering goods and services we believe would be of interest to our readers. If you prefer to be excluded, please send your current address label and a note requesting to be excluded from these promotions to TEN: The Enthusiast Network, LLC., 831 S. Douglas St., El Segundo, CA 90245, Attn: Privacy Coordinator. **Subscription Service:** Should you wish to change your address or order new subscriptions, you can e-mail soundandvision@emailcustomerservice.com, call (800) 264-9872 (international calls: 386-447-6383), or write to: Sound & Vision, P.O. Box 420235, Palm Coast, FL 32142-0235.



OMNI S2 RECHARGEABLE

Maxed Out Sound, Maxed Out Mobility



The Omni S2 Rechargeable is the ultra-compact portable speaker that's part of the First Great-Sounding Wireless Music System. With 10 hours of battery life, now you can take Polk's widely respected signature sound anywhere in your home, inside or out.

OUT LOUD

polkaudio.com

GoldenEar's New "World Beating Triton Five"

— Mark Fleischmann, *Sound & Vision*

"They absolutely rock the speaker world's foundation to the core ... delivering the kind of musical bliss some pay upwards of \$10,000 for" — Caleb Denison, *Digital Trends*



"Showstoppers ... they sounded obscenely good"

— Jerry Del Colliano, *Home Theater Review*

In keeping with GoldenEar's tradition, the Five's auspicious debut at the 2015 CES Show had a jaw dropping effect on the world's audio press. Sound&Vision's Rob Sabin wrote that the Fives were, "spectacularly open and transparent with wide deep sound staging" and "nearly brought me to tears thanks to the tremendous detail the Fives rendered on a Buddy Holly recording". Stereophile's Herb Reichert wrote, "These loudspeakers disappeared better than any I have ever heard" and then added, "While the music was playing I swear I could see nymphs and goddesses dancing around the soundstage". Normally outspoken writers like Sound&Vision's Darryl Wilkinson said, "I am running out of superlatives", and HD Living's Dennis Burger raved, "Quite frankly stupefying ... bowled away doesn't scratch the surface".

"The value for the money here is clear off the charts"

— Chris Martens, *HiFi+*

GoldenEar's goal is to deliver to you absolutely the best sound possible for the money. Superbly lifelike three-dimensional imaging, ultra high resolution, tremendous dynamic range, extraordinary deep bass response, silky smooth high frequency extension along with you-are-there clarity and presence are all a result of GoldenEar's most advanced components and technologies. Best of all, the Fives will deliver exceptional performance with moderately priced receivers, while also allowing you to appreciate the subtle qualities of the world's finest audio components. And, just as importantly, they deliver state-of-the-art sound quality with two channel music as well as multi-channel home theater, including Dolby's new Atmos technology, when paired with our perfectly matched center channel, surrounds, height speakers and subs.

"Best Sound for the Money at CES 2015"

— Robert Harley and Neil Gader, *The Absolute Sound*

The Triton Five is already adding illustrious new awards to GoldenEar's impressive collection. Although many focus on value for the money, some writers, like Sound Advice's Don Lindich, go further, giving them "Best Sound at the CES Show" and writing, "this is a cost-no-object preference for me". HD Guru's Gary Merson gave them "Top Pick Speaker at CES" and wrote, "They blew us away ... breaks new ground, outperforming competitors costing thousands more". SoundStage's Doug Schneider awarded a "Best System" honor. You owe it to yourself to visit your nearest GoldenEar dealer today!

GoldenEar Technology®
We Make High-End Affordable!™

www.goldenear.com

PO Box 141, Stevenson, MD 21153 (410) 998-9134

Like us on Facebook!
facebook.com/goldenear

Follow us on Twitter!
twitter.com/goldeneartech